Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Whereupon it was unanimously voted that the invitation be accepted, the letter placed upon the record of the present meeting, and that the officers of the Academy communicate to President Quincy the expression of the extreme interest of the Fellows of the Academy in the occasion which prompted this invitation, and their most cordial acceptance of it.

Four hundred and ninety-first meeting.

January 30, 1861. — STATUTE MEETING.

The PRESIDENT in the chair.

The Corresponding Secretary read a letter from the Hon. G. M. Dallas, the American Minister at London, enclosing a copy of correspondence with Lord John Russell, Secretary of State, and announcing the liberal donation by the British Government to the American Academy, of a complete set of the Geological Maps and Sections of the Survey of the United Kingdom of Great Britain.

Mr. J. E. Oliver, of Lynn, was elected a Fellow, in Class I. Section 1.

Professor Peirce presented the results of an investigation of the phyllotaxic numbers and their relations.

President Felton gave an account of the progress that had been made, and the results attained, in unrolling and deciphering the Herculanean manuscripts.

Dr. C. T. Jackson exhibited specimens of eocene tertiary coal from the Isthmus of Darien, near Chiriqui, similar in character to cannel coal, although of so much more recent formation.

Mr. Newcomb presented the results of an investigation of the dynamical theory of gases.

One of the most beautiful hypotheses ever propounded in physics is that which has lately been known as the dynamical theory of gases. This theory supposes a gas to be composed of isolated particles, moving about in every direction with great velocity, and continually striking and rebounding from each other. The expansive force is due to collisions against the sides of the containing vessel. The temperature depends upon the rapidity of the motion, being represented by the *vis viva* of the separate molecules. This theory has therefore a very intimate relation with the mechanical theory of heat, and is in part dependent on it. The truth of such a theory must be judged of from the agreement of the results deduced from it with observed phenomena. The following physical laws and properties of gases follow from this theory.

1. Mariotte's law.

2. Equal volumes of all gases set free the same amount of heat when compressed by the same fractional part of their volume, this amount being the exact mechanical equivalent of the force employed in producing the compression. Hence, if the compression is considerable, the amount of heat will vary with the rapidity of the compression, being much greater when the whole amount of heat set free is confined in the gas, than when it is suffered to escape as rapidly as it is formed.

3. Gases expand equally for equal increments of temperature.

4. Equal volumes of all gases, measured at the same temperature and pressure, contain the same number of particles.*

5. Gases will diffuse into each other in accordance with the following laws.

α. Gases at the same temperature and pressure will diffuse into each other with a velocity directly as the square root of the specific gravity, when measured by the *mass* which is diffused, and therefore *inversely* as the specific gravity when measured by volume.

β. The temperature of the gas being increased, while its volume remains constant, the diffusive power will increase as the square root of the elasticity.

γ. The temperature varying, while the pressure remains constant, the diffusive power will vary inversely as the volume.

Or, in general, gases diffuse into each other according to the laws which regulate their flow into a vacuum.

6. A body moving rapidly through a gas will be subject to an increase of temperature, varying as the square of its velocity. For different gases this increase will be directly as the specific gravity of the gas; but the effect of radiation being eliminated, the increase of temperature will in the case of the same gas be independent both of the temperature and the density of the gas.

---

* Maxwell, Philosophical Magazine, January, 1860.

7. If the particles were perfectly hard and spherical, the specific heat under constant volume would be to that under constant pressure as 3 to 5. If they were hard, but not spherical, this ratio would be that of 3 to 4. The latter result follows from an elegant theorem given by Professor Maxwell in Vol. XX. of the Philosophical Magazine; viz. that if the particles are hard, but not spherical, the sum of their *vires vivæ* of translation will be equal to that of their *vires vivæ* of rotation. Unless it can be shown that this ratio will be lessened by supposing that the non-spherical particles are not hard and unyielding, which certainly seems improbable, this result will present the greatest difficulty which the theory has to encounter.

Considering the number and variety of the phenomena of gases which are accounted for on this theory, and especially the exactness with which it accounts for the hitherto inexplicable phenomena of diffusion, there seems to be a considerable probability in its favor. The small discrepancy between the observed and computed ratio of the specific heats (1.42 and 1.33) may be found to proceed from some property of the particles not taken account of in the mathematical analysis.

The laws of diffusion are obtained on the hypothesis that the gases are separated by an exceedingly thin partition, pierced with extremely small holes. The change of temperature produced by motion proceeds from the changed velocity of impact of the particles against the body, each molecular impact producing a heat-wave.

Professor Gray presented the following papers: —

1. *Characters of some Compositæ in the Collection of the United States South Pacific Exploring Expedition under Captain Wilkes, with Observations, &c.* By Asa Gray.

Vernoniaceæ.

Monosis insularum (sp. nov.): fruticosa, laxe ramosa; foliis oblongis acuminatis repando-dentatis basis cuneatis in petiolum attenuatis puberulis supra glabratis subtus ad costam venasque cum ramis adpresso-tomentellis; capitulis corymbosis; pappi setis rigidis vix denticulatis, majoribus apice clavellatis. — Tonga and Feejee Islands. A true congener of *M. Wightiana*, DC., the type of the genus, which stands in nearly the same relation to *Gymnanthemum* that De Candolle's section *Eremosis* does to *Vernonia.*

ALBERTINIA BRASILIENSIS, Spreng. To this belongs Gardner's *Vernonia platycephala*, and Nuttall's *Symblomeria Baldwiniana*.

PARANEPHELIUS UNIFLORUS, Poepp. & Endl. Of this three varieties may be recognized, viz. α. PINNATIFIDUS, β. BULLATUS (*P. bullatus*, Gray, Wedd. Chl. And. 1, p. 214); γ. OVATUS (*P. ovatifolius*, Gray, ined. *P. ovatus*, Wedd. l. c. t. 37), which Weddell as well as I myself had distinguished as species; but an attentive examination of various specimens leads to the conclusion that they are all forms of one.

LIABUM LYRATUM (sp. nov.): herbaceum; foliis supra hirsutiusculis glabratisve subtus arachnoideo-tomentosis, caulinis lyrato-lobatis petiolis basi auriculatis plerumque connatis, summis sessilibus basi dilatata connatis, lobo terminali maximo subinciso et repando-denticulato; pedunculo terminali elongato mono-oligocephalo; involucri squamis oblongis substriatis; pappo e setis paleolisve rigidis inæqualibus, exterioribus dimidio brevioribus. *Alibum liaboides*, Less.? — Obrajillo, Peru: also collected by Matthews, no. 3057. If this proves to be the *Alibum liaboides* of Lessing, that genus cannot stand upon the characters indicated. For, as well as can be told from imperfect specimens with the heads injured by insects, the pappus is similar in the disk and ray, the exterior not really coroniform; and the plant nearly accords with *Liabum*, in the extended sense, or with *Andromachia* § *Pleionactis*, DC., except that the bristles of the pappus are more stout and rigid, and also fewer. They are fragile and deciduous, when the summit of the achenium appears somewhat like a short crown.

Eupatoriaceæ.

CONOCLINIUM SUBGLUTINOSUM (sp. nov.): glabrum; caulibus basi suffruticosis; foliis longe petiolatis late deltoideo-ovatis acuminatis serratis membranaceis tripli-quintuplinerviis utrinque subglutinosis; corymbo polycephalo; involucri squamis 10-13 dorso subglutinosis bicarinatis, exterioribus ovatis, intimis spathulatis acutis; achenio glaberrimo. — Brazil, at the base of the Organ Mountains, near Rio. This may be somewhere described as an *Eupatorium*, but I do not identify it with any published species. The receptacle is acutely conical.

Asteroideæ.

VITTADINIA, A. Rich.

Char. emend. Capitulum multiflorum, heterogamum; fl. radii uni-pluriserialibus fœmineis, disci (pluribus paucisve) tubulosis hermaphroditis. Involucrum obconicum seu hemisphæricum, imbricatum, pauciseriale, squamis inæqualibus angustis appressis. Receptaculum planum, nudum, pl. m. alveolatum. Ligulæ parvæ, tubo suo fere semper breviores, nunc exiguæ stylo ipso breviores. Corollæ disci tubulosæ, 4 – 5-dentatæ. Antheræ *Euasterinearum*. Styli rami fl. herm. superne elongato-subulati hirtelli. Achenia compressa, striata, vel 4 – 6-costata, vel tantum marginato-bicostata lateribus enerviis, apice sæpius contracto, disco epigyno parvo. Pappus simplex, conformis, e setis capillaribus scabris uni-pauciserialibus. — Suffrutices vel herbæ Oceanicæ, caulibus ramosis plerumque foliosissimis, foliis alternis. Capitula aut solitaria ramos terminantibus aut corymbosis: ligulæ abæ vel purpureæ.

Vittadinia, A. Rich. Bot. Voy. Astrol. Fl. N. Zel. (1834), p. 250.
Tetramolopium, Nees, Ast. (1833), p. 202, pro parte.
Vittadinia, Tetramolopium § 1 & *Eurybiopsis,* DC. Prodr.

De Candolle's *Eurybiopsis* is essentially identical with the older *Vittadinia* of A. Richard, and has been referred to it by Dr. Hooker. The only observed difference is, that the faces of the achenium of *Eurybiopsis macrorhiza*, if I rightly identify the plant, are nerveless; those of *Vittadinia* are striate-nerved. There must, however, now be added to the genus several Hawaian species, one of which is strictly an *Eurybiopsis;* another, the type in part of *Tetramolopium*, Nees, differs only in its less copious uniserial pappus, and in the shorter, mostly four-ribbed achenia; while others, with corymbose and still smaller heads, have decidedly pluriserial rays, with their more reduced ligules sometimes even shorter than their styles, and the hermaphrodite flowers fewer, — in one instance even reduced to unity, — so that these are to *Vittadinia* proper what the Conyzoid Erigerons are to *Stenactis* or to true *Erigeron*. The genus, thus augmented, while by its larger-flowered species nearly related to *Eurybia* (from which De Candolle and Dr. Hooker remark that it technically differs only in its compressed achenia), and nearly congruous with the group of ambiguous Asters designated under the name of *Orthomeris* by Torrey and Gray, is now seen, on the other hand, to be the analogue of *Erigeron*. From the latter already too polymorphous genus, *Vittadinia* would be well distinguished by its striate or ribbed achenia, and the slender subulate tips of the styles, except that, unfortunately, some of the species show neither facial ribs nor striæ, while a few species of *Erigeron*, as Weddell regards them, have long and slender tips to their styles, and some North American ones have four-nerved achenia. The habit generally is not that of *Erigeron*, and the achenia and the more imbricated involucre will distinguish those species which might otherwise be confounded with the *Cœnoti.* The short, but always distinct ligules are characteristic of the genus. Most of the Sandwich-Island species are decidedly shrubby plants, those of New Zealand and Australia woody at the base; but there are two Australian species which appear to have annual roots. On the other hand, *Erigeron fruticosum* of Juan Fernandez, which forms a shrub, is apparently a genuine *Erigeron.*

De Candolle assigns uniserial rays to his *Eurybiopsis* and to the New Zealand *Vittadinia,* and bi-triserial rays to the Australian *Vittadiniæ;* Dr. Hooker regards them as uniserial throughout. When ligules are numerous and narrow, this character has neither definiteness nor significance, as the genus *Erigeron* shows. To both *Eurybiopsis* and *Vittadinia* De Candolle ascribes a "*pappus uniserialis,*" a term which he seems not always to have employed in one and the same sense. In the species known to De Candolle, the very copious bristles of the pappus certainly occupy two or more ranks, just as in *Aster.* From these there is a gradual transition to the more scanty and obviously uniserial pappus of *V. tenerrima* and the smaller-flowered species of the Sandwich Islands.

For the genus, as here augmented, the name of *Tetramolopium* might be assigned in virtue of its priority, as it antedates *Vittadinia* by a year. But the former name was given to two heterogeneous species, viz. one from the Sandwich Islands, which has long remained obscure, and one from the Quitensian Andes, which is a *Diplostephium,* and with which De Candolle rightly associated two other of Humboldt and Kunth's Asters. In this case the name *Vittadinia* may fairly be kept up. The three generic names thus brought together may be retained for as many sections, characterized as follows: —

§ 1. VITTADINIA VERA. Achenia elongata, faciebus pluristriatis. Pappus copiosus pluriserialis. Ligulæ pl. m. conspicuæ. Capitula majuscula, solitaria.

V. TRILOBA (DC. non Hortul.): caule erecto e radice annua apice subcorymboso cum foliis spathulatis cuneatisve basi longe attenuatis superne trilobis vel tridentatis (ramealibus angustioribus sæpius integerrimis) scabro-hirtellis vel hirsutis; ligulis purpureis breviter exsertis; acheniis clavato-linearibus pluristriatis immarginatis pubescentibus, maturis involucro etiam pappo pluriseriali fulvo æquilongis. — Variat foliis caulinis tripartitis, lobis trifidis seu laciniatis. — Eastern Australia. — The plant which was generally cultivated in the European gardens, a few years ago, as *Vittadinia triloba*, and which Dr. Sonder, mistaking it for the genuine Australian plant of that name, has described as *Erigeron trilobum*, is manifestly De Candolle's *Erigeron mucronatum*, of Mexico and Venezuela.

V. CUNEATA, DC. (*Eurybiopsis gracilis*, Hook. f. and probably *V. dentata*, DC.) is not well named. The perennial root, undivided leaves, and less rough pubescence distinguish it from the preceding species.

V. SCABRA, DC. (*Eurybiopsis scabrida*, Hook. f. *E. Hookeri*, Sonder). Müller's plant, or at least the var. *angustifolia*, accords pretty well with the character of De Candolle's *V. scabra*. It appears to be distinguishable by the less copious and shorter pappus, and by the less attenuated achenia, which are evidently margined by ribs considerably stronger than the facial nerves.

§ 2. EURYBIOPSIS. — Achenia minus elongata, marginato-binervia, faciebus haud striatis. Pappus uni-pluriserialis. Cæt. sect. præcedentis.

V. HISPIDULA (F. Müll. ined.): undique scabro-hispida seu hispidula; caule erecto e radice annua stricto oligocephalo; foliis caulinis linearibus sessilibus imisve spathulatis paucidentatis; ligulis e pappo leviter exsertis; acheniis appresse-hirtellis obovatis apice breviter acutatis faciebus enerviis pappo fere uniseriali brevioribus. — Eastern and Tropical Australia.

V. MACRORHIZA (*Eurybiopsis macrorhiza*, DC.) if rightly identified with Dr. Müller's specimens from "Providence Hill," considerably resembles dwarf and narrow-leaved forms of *V. scabra*, but the faces of the achenia are nerveless, as in *V. hispidula*. The pappus is more copious than in the latter, and about the length of the (immature) linear achenia.

V. HUMILIS (sp. nov.): suffruticosa, e basi crassa multicaulis; caulibus foliosissimis; foliis anguste spathulatis integerrimis undique hispidis seu hirtellis aveniis, costa subtus incrassata; pedunculis brevibus solitariis vel subumbellatis; ligulis uniseriatis flores disci (6 – 12) vix superantibus stylis duplo longioribus; acheniis lineari-oblongis marginato-binervatis hirtellis estriatis pappo subtriseriali inæquali dimidio brevioribus. — Variat foliis hirsutioribus vel subglabratis, nunc fere linearibus basi longe attenuatis. — Sandwich Islands, on the mountains of Hawaii and Maui. — This species manifestly connects the original *Tetramolopium* with *Eurybiopsis*. A depressed and glabrate variety, from the district of Waimea, Hawaii, makes the nearest approach to the *Tetra-*

molopium tenerrimum of Nees, which, however, is distinguished by its smoothness as well as smaller size, the more exserted ligules, uniserial pappus, and glabrous, mostly four-ribbed achenia. It belongs therefore to the following section.

§ 3. TETRAMOLOPIUM (*Tetramolopium*, Nees, pro parte). — Achenia breviuscula, quadricostata, nempe costis 2 marginalibus validis, 2 facialibus angustioribus, his raro inconspicuis quandoque geminatis. Pappus uniserialis. Capitula nunc solitaria ligulis exsertis, nunc parva corymbosa ligulis pluriserialibus discum haud superantibus, floribus disci paucis vel paucissimis.

V. TENERRIMA (*Aster tenerrimus*, Less. *Tetramolopium tenerrimum*, Nees): suffruticulosa, glabra, cæspitoso-multicaulis; foliis in caulibus (brevissimis seu decumbentibus) confertis lineari-spathulatis uninerviis aveniis parce hispidulo-ciliatis basi longe attenuatis; pedunculis solitariis gracilibus bracteis pluribus setaceis instructis; ligulis uniseriatis discum pluriflorum superantibus tubo subæquilongis; acheniis obovato-oblongis 4-5-costatis; pappo uniseriali æquali. — Oahu, Chamisso, Macrae. The character from a specimen collected by Macrae.

V. REMYI (sp. nov.): fruticosa, corymboso-ramosissima, glabra; foliis secus ramulos confertissimis acerosis deorsum leviter attenuatis supra canaliculatis; pedunculis terminalibus solitariis elongatis puberulis bracteis parvis setaceis instructis monocephalis; involucri hemisphærici squamis lineari-subulatis margine vix scariosis; ligulis biseriatis discum pluriflorum superantibus tubo breviusculo subduplo longioribus; acheniis appresse hirsutulis obovato-oblongis quadricostatis; pappo albo uniseriali. — Maui, Sandwich Islands, coll. Remy, no. 239. — This is a shrub, at least a foot or two in height, with rigid branches squarrose with the crowded leaf-scars, the laricine leaves much crowded on the ultimate branchlets; the heads about as large as those of *V. tenerrima.* It is the only species known in which the ligules are decidedly longer than their tube. Although it is not surprising that Lessing should have failed to recognize the close relationship of his *Erigeron lepidotus* with his *Aster tenerrimus,* he would surely have associated them had he known the present species, which, with the inflorescence and the exserted ligules of the former, has the habit of the latter, especially of the variety *arbuscula.*

V. CHAMISSONIS (*Erigeron lepidotus*, Less. *E. pauciflorus*, Hook. & Arn.): fruticosa, ramosissima, glabella; ramulis corymbosis puberulis usque ad apicem foliosissimis; foliis lineari-lanceolatis seu linearibus

basi sensim attenuatis et sæpius hirsuto-ciliatis integerrimis subdentatis rariusve laciniato-incisis creberrime papuloso-punctulatis submembranaceis venulosis; pedunculis brevibus filiformibus corymboso-oligocephalis; capitulis parvis (2 lin. longis); involucri squamis lineari-lanceolatis acutis vel acuminatis; ligulis 15 – 20 tubo sub-brevioribus flores disci 5 – 10 vix superantibus stylis plerumque longioribus; acheniis obovato-oblongis parce hirtellis vel glabratis quadricostatis, costis marginalibus calloso-incrassatis, facialibus angustioribus nunc fere obsoletis raro geminatis; pappo uniseriali. — Kaala Mountains, Oahu.

Var.? ARBUSCULA: foliis secus ramulos ultimos confertissimis rigidioribus angustioribus nunc fere filiformibus; pedunculis abbreviatis; capitulis paucioribus majoribus. — On the Great Crater of the eastern part of Maui, Sandwich Islands. — This would naturally be taken for a distinct species, and may prove to be so. The heads are decidedly larger than those of *V. Chamissonis*, being three lines in diameter, and the flowers more numerous, but similar.

V. CONSANGUINEA (sp. nov.): fruticosa, corymboso-ramosissima, glabella; ramulis usque ad apicem foliosissimis; foliis lineari-lanceolatis seu lineari-spathulatis basi attenuatis et subciliatis integerrimis (raro 1 – 2-dentatis); pedunculis brevibus corymbosis mono – oligocephalis; capitulis parvis (2 lin. longis); involucri pluriseriali squamis lineari-oblongis obtusissimis scarioso-marginatis, margine creberrime denticulato-ciliato; ligulis 25 – 30 tubo subæquilongis flores disci adæquantibus; acheniis *V. Chamissonis* sed glabris. — Sandwich Islands, on Hawaii and the mountains of Kauai. Much resembles the preceding, but the involucre is more imbricated, its scales broader, very obtuse, and bordered with a more definite scarious margin, which is fringed with fine and close denticulations: the ligules are more numerous.

V. ARENARIA (sp. nov.): suffruticosa, laxe ramosa, hirtella; ramis usque ad apicem foliosis; foliis lanceolatis seu oblongo-lanceolatis basi attenuatis hirto-ciliatis integerrimis mucronatis; capitulis (3 lin. diametr.) breviter pedunculatis corymbosis; involucri squamis linearibus acutis submembranaceis; ligulis plurimis (30 – 35) tubo brevioribus flores disci 5 – 9 subæquantibus; acheniis oblongis quadricostatis hirsutulis seu glabratis; pappo uniseriali, setis inæqualibus. — Sandwich Islands, on sand-hills of Maui, and district of Waimea, Hawaii.

V. CONYZOIDES (sp. nov.): fruticosa, ramosissima, cinereo-pubescens; ramulis usque ad apicem foliosis; foliis angusto-lanceolatis basi longe attenuatis integerrimis membranaceis; capitulis minimis compluribus

congestim corymbosis; involucri squamis linearibus subacutis; ligulis plurimis brevissimis pappum uniserialem adæquantibus stylis suis brevioribus; flore hermaphrodito sæpius unico; acheniis parce hirsutulis 2-4-costatis. — Sandwich Islands, on the sand-hills of Maui. — The facial ribs of the achenia are often obsolete. If the species which connect it with the original *Tetramolopium* were unknown, this would surely be referred to the *Cœnotus* section of *Erigeron*.

CALOTIS PALMATA (sp. nov.): hispido-pubescens; foliis cuneatis seu flabelliformibus palmato-3-5-fidis (nunc pedatifidis) inferne longe quasi in petiolum alatum attenuatis basi leviter auriculatis, summis linearibus oblongisve integerrimis vel apice tridentatis; involucro biseriali fere 20-phyllo; acheniis complanatis lævibus; pappo e paleis 2-4 et aristis 1-2 versus apicem parce retrorsum aculeolatis. — Hunter's River, New South Wales. An herbaceous species, with larger heads than those of *C. dentex*. Cunningham's *C. dilatata* has the awns of the pappus similarly but more sparingly barbed; but its leaves are not lobed, and the basal auricles are more conspicuous.

LAGENOPHORA PICKERINGII (sp. nov.): foliis hirsutis primum villoso-lanatis oblongis ovalibusque in petiolum attenuatis repando-dentatis; scapo gracili nudo; involucri squamis linearibus fere glabris; acheniis radii oblongo-lanceolatis erostratis insigniter costatis glaberrimis, disci sterilibus. — Mountains of Muthuata, one of the Feejee Islands. Among the largest species of the genus, the scape 6 to 8 inches high, but the head is proportionally rather small, in fruit only three lines in diameter. The achenia are coarsely striated by 8 or 10 strong and salient ribs (in a manner unknown in other species), not beaked, but terminated by an epigynous disk about the size of the basal callus.

APLOPAPPUS PŒPPIGIANUS, var. RADIATUS (*Diplopappus Pœppigianus*, Hook. & Arn., forma eradiata. *Aplopappus sericeus*, Philippi): humilis, fruticosus; foliis secus ramos breves confertissimis anguste lanceolatis rigidis utrinque attenuatis cuspidatis integerrimis undique sericeis; pedunculis elongatis nudis parce setaceo-bracteatis monocephalis; involucri hemisphærici squamis lineari-subulatis glanduloso-puberulis, apicibus squarroso-patentibus; ligulis discum vix superantibus; acheniis sericeis. — Chili, on the Andes above Santiago. The rigid, entire, silvery-silky, Protea-like leaves are crowded on the short and tufted woody branches. Head rather larger than that of *A. pulchellus*.

APLOPAPPUS MACRÆANUS, will be a proper name for *Pyrrocoma* (*Chromochæta*) *angustifolia*, DC., *P. Macræana*, Remy in Gay. Fl. Chil. ?), in honor of one of its discoverers.

APLOPAPPUS PARVIFOLIUS (*Pyrrocoma parvifolia*, DC.), although nearly related to the last, is known by its smaller leaves and heads, and thinner, acutish scales of the involucre. The genus *Pyrrocoma* cannot be sustained upon the rayless heads, as De Candolle and Remy would have it; for intimately related, and even identical species are both radiate and rayless in different specimens, and the original *Pyrrocoma* has rays, as was long ago shown; the shape and the smoothness of the achenia also fail as characters; the form of the involucral scales offers no definite distinction, and the color of the pappus is of no account. That of *A. Macræanus* varies from deeply rufous to fulvous. *A.?* (*Pyrrochæta*) *Hænkei*, DC., is *Corethrogyne filaginifolia*, and was doubtless collected in California.

NARDOPHYLLUM REVOLUTUM, DC. To this belongs *Dolichogyne stæhelinoides* and *D. gnaphalioides*, DC. (*D. Candollei*, Remy). Contrary to Weddell's opinion, it seems clear that Remy's second thought (in Ann. Sci. Nat. ser. 3, 12, p. 184) was best, when he approximated *Dolichogyne* DC. to Dr. Hooker's section of *Chiliotrichum*, his genus, *Anactinia*. The wonder is that he did not combine such evident congeners. *Dolichogyne*, however, is antedated by *Nardophyllum*, Hook. & Arn. Here it is again remarkable that De Candolle, who had established the latter genus upon Hooker and Arnott's data, did not suspect its identity with his subsequent *Dolichogyne*, probably because he had ascribed to the former "antheræ basi bisetosæ" and "pappus plumosus." The anthers, like the corolla, are strictly Asterineous, and the bristles of the pappus moderately barbellate along their thicker upper part, not "plumose," as Hooker and Arnott write in their generic character, and hardly "subplumose" as they give it under the species. As to Weddell's extension of *Dolichogyne* to include (in his section *Tola*) three species with heterogamous flowers, the pistillate ones incipiently ligulate, I remark that the adoption of this view would merge the whole in a still older genus, *Lepidophyllum*, Cass., which differs only in having the ligules a little more developed (yet often bilabiate or irregularly cleft), and the pappus of stouter bristles. The leaves of *Lepidophyllum cupressiforme* are indeed opposite; but both opposite and alternate leaves occur in the nearly allied South African genus *Pteronia;* and the difference between *L. cupressiforme* and *L.*

Meyeni (*Baccharis quadrangularis*, Meyen, *Dolichogyne lepidophylla*, Wedd.) is paralleled in *Pteronia* and *Aplopappus*, &c. I should therefore propose to keep up the two genera, *Lepidophyllum* and *Nardophyllum*, and refer to the former (as above) Weddell's *Dolichogyne lepidophylla*, which he has figured, and probably his *D. rigida* and *D. rupestris*, with linear leaves. The nearest relatives of both genera (if we may distinguish them as genera) inhabit the corresponding cool and dry portion of the northern part of the American Continent, where they constitute similar features in the vegetation, i. e. are mostly social, frutescent plants on naked plains or plateaux, — Nuttall's *Chrysothamnus* (section of *Linosyris*, Torr. & Gray) strictly representing *Nardophyllum*, and his *Ericameria* being analogous to *Lepidophyllum*. Taken in connection with geographical distribution, slight characters in the pappus (though weakened in *L.* (*Chrysothamnus*) *Bigelovii*) and in the style may serve to separate the North American from the South American species. Yet in a general system and under a truer valuation of generic characters, they may well be combined. To *Nardophyllum* belongs : —

Nardophyllum Kingii the *Chiliotrichum Kingii*, Hook. f. Fl. Antarc., this being a strict congener of *N. revolutum*, and therefore the following, of which I have no specimens to examine; and which perhaps are not all specifically distinct: —

Nardophyllum humile. *Chiliotrichum humile*, Hook. f. *Anactinia Hookeri*, Remy.

Nardophyllum Darwini. *Chiliotrichum Darwini*, Hook. f.

Nardophyllum chiliotrichoides. *Dolichogyne chiliotrichoides*, Remy. — Weddell's *Dolichogyne armata*, with the branches of the style subspatulate and obtuse, appears doubtful.

Baccharis Gilliesii (sp. nov. *B. paucidentata*, var. *β*. Hook. & Arn. pl. masc.): herbacea e basi lignescente, glabra, humilis; caule ramosissimo; ramis corymbosis gracilibus striato-angulatis foliosis, ultimis capitulo solitario terminatis; foliis sessilibus leviter uninerviis aveniis, caulinis linearibus basi attenuatis integerrimis seu dentes 2-4 patentes gerentibus, ramealibus parvis angustissimis; involucro campanulato, squamis oblongis obtusissimis coriaceis dorso herbaceis margine tenuiter scariosis apice lanato-ciliatis; acheniis glaberrimis; pappo fœmineo involucrum ter superante. — Rio Negro, North Patagonia: also gathered by Tweedie, and at Buenos Ayres by Gillies. One specimen in the Hookerian herbarium is ticketed *B. nana*, Don, a name which I do not propose to revive, since the stems when well developed are a foot high. It is distinguished from *B. paucidentata* by its solitary heads, and its campanulate involucre with broader and very obtuse scales. *B. coridifolia* has clustered and much smaller heads, and scabrous-ciliate leaves. — *B. juncea*, Desf., to which belongs *B. subulata*, Don, often has the stems leafy, and so lignescent at the base that the root would seem to be perennial.

Senecionideæ.

TITHONIA PUSILLA (sp. nov.): annua, hispidula; foliis oppositis subalternisve lanceolatis fere integerrimis breviter petiolatis; capitulis nudis pedunculatis; involucri squamis lanceolatis hirsutis subpaucis; acheniis villosis; pappi paleis 4–6 aristisque binis plumoso-ciliatis. — Obrajillo, Peru.

VIGUIERA PERUVIANA (sp. nov.): foliis alternis ellipticis seu ovato-oblongis acutatis vel mucronatis acute serratis trinervatis utrinque cinereis supra hispidulo-scabris subtus appresso-hirsutulis basi acutis subsessilibus; involucri squamis oblongo-lanceolatis apice patentibus extus præsertim ad margines albo-hirsutis; receptaculo obtuse conico; ligulis elongatis; pappo 4-squamellato biaristato. — Andes of Peru, between Obrajillo and Culluay.

COREOPSIS (AGARISTA) PICKERINGII (sp. nov.): suffruticosa, fere glaberrima; ramis apice longe nudis monocephalis; foliis oppositis petiolatis triternatisectis, segmentis lineari-subulatis rhachi tenui vix latioribus; involucri squamis exterioribus linearibus interioribus oblongis dimidio brevioribus; paleis receptaculi oblongis obtusissimis, exterioribus dorso villosis; acheniis lineari-oblongis dorso sub palea glabris adventrem et præsertim margines villosissimis biaristatis; aristis villoso-barbellatis corolla paullo achenio dimidio brevioribus. — High Andes of Peru above Obrajillo. — This is one of a group of species of the Andes which unite De Candolle's Californian genus *Agarista* to *Coreopsis*. Of these *C. fasciculata*, Wedd. is in the present collection, and is no. 571 of Matthews's collection in the same district, wherefore I had named it *C. Matthewsii* in the Hookerian herbarium. It has both faces of the achenia glabrous, but the margins ciliate with long villi. *C. venusta*, H. B. K., or an apparent variety of it with nearly filiform leaves and smaller heads on short peduncles, was gathered by Matthews in the province of Chachapoyas. *C. capillacea*, H. B. K., was collected by Seemann at Loxa. And the two succeeding species (of which the latter most nearly approaches De Candolle's genus *Agarista*) are described from specimens in the Hookerian herbarium.

Coreopsis (Agarista) foliosa (sp. nov.): ramis hirtellis usque ad apicem confertissime foliosis; foliis (subpollicaribus) oppositis glaberrimis rigidis crassiusculis tripartitis, segmentis lateralibus anguste spathulato-oblongis, terminali tripartito; capitulis paucis subcorymbosis breviter pedunculatis; involucri externi squamis 8 lineari-oblongis obtusissimis pubescentibus quam interiores ovales ⅓ brevioribus; ligulis (flavis) oblongis; corollis disci luteis demum brunneis; acheniis oblongis hirsutis utrinque unicarinatis margine hirsutissimis biaristatis; aristis subsquamelliformibus triquetris dense ciliato-hirsutis corollam adæquantibus. — Andes of Peru, Matthews, No. 1376.

Coreopsis (Agarista) spectabilis (sp. nov.): suffruticosa? glabra; foliis oppositis circumscriptione rotundis bipinnatisectis vel 3–5-sectis, segmentis 5-partitis, lobis linearibus acutis integerrimis bi–trifidisve laxis; ramis in pedunculum longissimum (6–10-poll.) nudum monocephalum desinentibus; involucris ambobus 8-phyllis glaberrimis basi connatis, squamis exterioris linearibus quam interiores ovato-oblongæ colorato-marginatæ dimidio brevioribus; ligulis 8 magnis; disco luteo brunnescente; acheniis lineari-oblongis extus sub palea glabris marginibus et costa ventrali longissime villosis aristas 2 paleoliformes villoso-ciliatas corollam subæquantes gerentibus. Folia sesquipoll. diametro, capitulum disco semipoll. et ultra diam.; ligulæ pollicaria, flavæ. — Andes of Peru, McLean.

Coreopsis Mauiensis (sp. nov.): fruticosa, diffusa, parce hirtella, mox glabrata; foliis trisectis, segmentis oblongis vel subcuneatis inciso-dentatis (nunc 3–5-partitis seu terminali pinnatipartito); pedunculis elongatis monocephalis; involucri exterioris phyllis linearibus (apice nunc glandula instructis) interiores æquantibus; acheniis glabris anguste oblongis modice alatis haud contortis apice bidentatis, dentibus triangulari-subulatis. — Maui, Sandwich Islands, on sandy or dry hills near the coast; a form with more dissected leaves also collected by Remy.

Coreopsis and *Bidens* are separated by a single, artificial, and not wholly constant character. The group of species on which Nuttall grounded his genus *Diodonta* wholly accords with the *Platycarpœa* section of *Bidens*, except that the awns or teeth are antrorsely hispid or naked. Recently we have received, from Mr. Fritchey of Missouri, specimens of *C. aristosa*, Michx., or perhaps of a wild cross between that species and some *Bidens*, with *retrorsely* hispid awns. The Sandwich Islands offer a series of species which equally connect the *Psilocarpæa* section of *Bidens* with *Coreopsis.* Some of these, having their achenia remarkably curved or twisted at maturity, were naturally distinguished as a separate genus, *Campylotheca.* But its adoption merely gives us three limitless genera unmarked by any peculiarity of habit in the place of two artificially separated ones. The foregoing species is in all respects a good *Coreopsis.* The first of the following ones differs merely in its elongated achenium, slightly disposed to curve or twist. The others are *Campylothecæ*, with more or less curved or spirally twisted achenia, either narrowly wing-margined or wingless, but manifest congeners of the rest. Their union with *Coreopsis* is suggested both by their wanting the technical character of *Bidens*, and by the fact that the former already contains species with winged and with curved achenia. On the other hand only a slight and arbitrary line is to be drawn between *Bidens Sandwicensis*, Less., and *Campylotheca micrantha.* Yet when the (always straight) achenia of the former bears awns, these are retrorsely hispid, although sparingly so. Vain is the attempt to draw absolute limits where Nature luxuriates in gradations; but, on the whole, the old distinction between *Bidens* and *Coreopsis* appears to be practically the best one.

COREOPSIS (CAMPYLOTHECA) MACROCARPA (sp. nov.): herbacea? glabra; foliis pinnatim 5-sectis, segmentis ovatis cuspidato-acuminatis argutissime creberrime serrulatis; pedunculis oligocephalis folia subsuperantibus; acheniis pro capitulo magnis (subpollicaribus) linearibus striatis alatis vix tortis subapice biaristulatis seu bicorniculatis. — Sandwich Islands, on the mountains of Oahu.

COREOPSIS (CAMPYLOTHECA) MACRÆI (*Campylotheca grandiflora*, DC. Prodr.): herbacea, puberulo-hirtella; ramis elongatis patentibus; foliis ternatim sectis, segmentis lanceolatis acuminatis creberrime serratis; capitulis laxe paniculatis haud magnis; acheniis linearibus glaberrimis calloso-marginatis calvis "aut junioribus vix bisetosis" spiraliter tortis. — Hawaii, Sandwich Islands, Macrae, Remy. The above character is drawn up (with De Candolle's in view) from no. 287 of Remy's collection, supplied by the Paris Museum. The species does not merit the name *grandiflora* (preoccupied in *Coreopsis*), although the heads are nearly twice the size of those of *C. micrantha.*

COREOPSIS (CAMPYLOTHECA) COSMOIDES (sp. nov.) herbacea, fere glabra; foliis caulinis pinnatim 5-sectis summisve trisectis, ramealibus

sæpe indivisis segmentisque ovato-oblongis acuminatis argute serratis membranaceis; pedunculis breviusculis monocephalis; capitulo magno (pollicem longo); involucro exteriori 8-phyllo interius adæquante, phyllis oblongis seu oblongo-lanceolatis; ligulis (subpollicaribus) apice inciso lobatis; genitalibus præsertim stylo longissimo valde exsertis; acheniis (immaturis) linearibus exalatis nunc flexuoso-curvatis margine hispidulis apice setuloso-coronulatis aristis 2 brevibus seu brevissimis fere nudis subterminatis. — Hawaii, Sandwich Islands: also in coll. Remy, no. 278.

Coreopsis (Campylotheca) Menziesii (sp. nov. *Campylotheca australis*, Less. pro parte ?): suffruticosa, fere glaberrima, corymboso-ramosa; foliis bipinnati-(vel subternati-) sectis, summis 3 – 5-partitis, segmentis longe anguste linearibus integerrimis; capitulis parvis (2 lin. longis) plurimis in corymbum digestis breviter pedunculatis; involucro exteriori breviore; acheniis angustissime linearibus elongatis glaberrimis apice calvis rariusve obsolete 1 – 2-setulosis, exterioribus sæpe tenuiter subalatis, maturis leviter flexuosis vel tortis. — Variat inflorescentia foliisque (segmentis interdum laciniatis) pl. m. pubescentibus. Ligulæ 3 lin. longæ. — Hawaii and Maui, Sandwich Islands. Also collected by Menzies, Chamisso ? and Remy.

Coreopsis (Campylotheca) micrantha (*Bidens micrantha*, Gaud. *Campylotheca micrantha*, Cass. *C. australis*, Less. excl. syn. Forst. & Spreng.): basi suffruticosa, glabra, paniculato-ramosa; foliis pinnatim 3 – 7-sectis partitisve, summis nunc indivisis, segmentis lanceolatis seu oblongo-lanceolatis grosse argute serratis nunc incisis nunc 3 – 5-fidis venosis; capitulis parvis (2 lin. longis) plurimis corymbosis; involucris subæquilongis; acheniis elongatis angustissime linearibus glabris exalatis apice nudo aut truncato aut sæpius mucrones vel aristulas 1 – 2 breves læves gerentibus, maturis brunneis arcte spiraliter contortis. — Sandwich Islands, especially Oahu. Variable in the foliage, which is commonly more dissected than in Gaudichaud's figure. Chamisso seems to have had specimens of *C. Menziesii* intermixed with various forms of the present species. The achenium, described by Lessing as "anguste alatum" would appear to belong to the former species.

Bidens Sandwicensis (Less.): herbacea, glabra; foliis membranaceis plerisque trisectis, segmentis ovatis seu ovato-lanceolatis acuminatis argute serratis, lateralibus petiolulatis vel sessilibus; capitulis laxe corymboso-paniculatis parvis radiatis; involucri phyllis linearibus gla-

bris eciliatis; acheniis anguste linearibus glabris vel marginibus parce hispidulis apice setulosis aut exaristatis aut aristulis 1 – 2 (nunc nudis nunc parce retrorsum hispidulis) superatis. — To this belongs *B. micrantha*, Hook. & Arn., but not of Gaudichaud; *B. peduncularis*, DC., but not of Gaudichaud; *B. mutica* and *B. gracilis* of Nuttall. In more than one collection it has been confounded with *Campylotheca micrantha.* Moreover, the awnless state is doubtless the *Adenolepis pulchella* of Lessing; a gland-like thickening at the tip of the involucral scales being often obvious in this, and also in some allied species (especially in *Coreopsis Mauiensis*), but it is inconstant. To this species may also be referred *B. paniculata*, Hook. & Arn., from Tahiti (as a simple-leaved state, with the awns more developed and more barbed than usual), and probably *B. angustifolia*, Nutt. (with dissected leaves); likewise the following varieties: —

Var. HETEROPHYLLA (*B. luxurians*, Hook. & Arn.): caule basi suffruticosa? foliis longe petiolatis plerisque simplicibus oblongo-lanceolatis acumine longo integerrimo caudatis basi attenuatis, paucis trisectis, segmentis sublinearibus; acheniis sæpius biaristulatis.

Var. OVATIFOLIA: caule herbaceo; foliis simplicibus ovatis subcordatis longissime petiolatis; ovariis coronula setularum superatis exaristatis.

BIDENS HAWAIENSIS (sp. nov.): herbacea, glaberrima; caule elato ramoso polycephalo; capitulis corymboso-paniculatis; foliis omnibus simplicibus longe petiolatis oblongis vel ovatis acutis vel acuminatis crebre serratis crassiusculis; involucri glaberrimi phyllis linearibus obtusis eciliatis; ligulis 7 – 8 elongatis; acheniis anguste linearibus glabris apice nudo breviter biaristatis, aristis erectis retrorsum barbatis. — Hawaii, Sandwich Islands, at various stations. Disk of the capitulum when in flower 3 or 4, in fruit fully 6, lines long; ligules yellow, 5 – 9 lines long.

BIDENS LANTANOIDES (sp. nov.): fruticosa, ramosa, hirsutulo-pubescens; foliis omnibus simplicibus ovalibus oblongisve creberrime serratis petiolatis; pedunculis solitariis monocephalis folia subæquantibus; involucri exterioris phyllis lineari-oblongis discum adæquantibus; ligulis brevibus; acheniis lineari-subtetragonis marginibus apiceque hispidulis breviter vel brevissime biaristatis. — Eimeo, Society Islands. Head 4 lines in diameter.

Var.? GLABRATA: magis herbacea; foliis utrinque attenuatis; capitulis subpaniculatis. — Tahiti.

LIPOCHÆTA, DC. excl. sp. Amer.

Lipotriche, pro parte, Less. in Linnæa, 6, p. 510, & Syn. p. 231, non R. Br.
Lipochæta, DC. Prodr. 5, p. 610, excl. sp. Amer. (i. e. sp. *Zexmeniæ*).
Microchæta, Nutt. in Trans. Amer. Phil. Soc. 7, p. 450, excl. sp. *Wollastoniæ.*
Schizophyllum, Nutt. l. c. p. 452, non Fries.
Aphanopappus, Endl. Gen. Suppl. 2, p. 43.
Macræa, Hook. f. in Proceed. Linn. Soc. n. 28, p. 278, & Linn. Trans. (Fl. Galap.).
Trigonopterum, Anderss. Veg. Galap. in Voy. Eugen. Bot. t. 6, f. 1.

I cannot doubt that the following Sandwichian species are all congeneric, notwithstanding their diversified habit, and the complete abortion in two of them of the short awns or chaffy scales of the pappus. With the latter may also be associated Dr. Hooker's *Macræa,* in which the coronula is generally a little more developed, and the awns obsolete, but not always entirely wanting. To merge all these plants in *Wollastonia* (which shows no tendency to winged achenia) would hardly be permitted, although the earlier-enumerated of the following species would not there appear widely out of place. On the whole, it will be more difficult to separate them clearly from *Wedelia* on the one hand and *Zexmenia* on the other.

Since the last-named genus takes in all the American species of De Candolle's *Lipochæta,* which genus was essentially founded upon Lessing's *Lipotriche,* and this mainly upon the leading Sandwichian species, it is evident that the present group should in strictness bear the name of *Lipochæta.* If the rule of priority be waived on account of the inappropriateness of this name to one or two of the species, the succession would best fall upon *Macræa.* But convenience in the present instance coincides with precedence.

L. AUSTRALIS (*Lipotriche australis,* Less.) : suffruticosa, hirtello-scabra vel hispidula; foliis ovatis ovato-lanceolatisve 3–5-plinerviis acuminatis argute serratis nunc incisis aut sessilibus aut in petiolum brevem marginatum decurrentibus ; involucri squamis ovato-lanceolatis subacuminatis.

Var. α. CONNATA (*Verbesina connata,* Gaud. *Lipochæta connata,* DC.) : foliis sessilibus basi nunc angustata connatis nunc late connato-amplexicaulibus.

Var. β. DECURRENS : foliis basi in petiolum plerumque alatum contractis, lamina nunc ovata seu rhombea nunc oblongo-lanceolata, in latifoliis sæpius argute duplicato- vel laciniato-serrata. — Here probably belongs *Microchæta lanceolata,* Nutt.

Var. γ. LOBATA (*Verbesina lobata*, Gaud. *V. hastulata*, Hook. & Arn. *Lipochæta lobata & hastulata*, DC.): foliis subsessilibus vel breviter petiolatis basim versus utrinque lobatis seu laciniato-dentatis. — Pappus, in all the forms of this polymorphous species, of 2 or 3 short chaffy awns or narrow scales. In all the species an epigynous gland, at the base of style of the disk-flowers, fills the bottom of the tube of the corolla.

L. SUBCORDATA (sp. nov.): herbacea? erecta, cinereo-strigulosa; foliis deltoideo-subcordatis acuminatis duplicato-serratis reticulatis longe petiolatis, petiolis gracilibus; involucri squamis ovato-oblongis obtusiusculis. — Hawaii, on the coast.

L. CALYCOSA (sp. nov.): fruticosa, hispidulo-scabra; foliis lanceolatis oblongisve obtusis obsolete subserratis vix triplinerviis brevissime petiolatis; involucri squamis 5 – 8 ovalibus seu obovatis obtusissimis foliaceis discum subsuperantibus; paleis receptaculi convolutis truncatis. — Diamond Hill, Oahu.

L. LAVARUM, DC. (*Verbesina lavarum*, Gaud.) Well marked by its silvery-canescent (but scarcely strigose) leaves, which vary from narrowly to broadly lanceolate or oblong, the veins and triple ribs conspicuous beneath. Achenia all fertile, very variable (as in the other species and in the manner of many Verbesinoid genera) as to the wings, &c. The wings, when developed, are extended upwards into a salient process as long as the pappus (which is of 2 or 3 stout, puberulent, more or less clavate and blunt awns or paleæ) but wholly free from it.

L. INTEGRIFOLIA (*Microchæta integrifolia*, Nutt.): herbacea e radice lignescente, humifusa, ramosissima, minutim sericeo-canescente; foliis subcarnosis parvis (pollicaribus) spathulatis linearibusque integerrimis, venis haud perspicuis; pedunculis solitariis terminalibus; involucri squamis biseriatis ovatis vel rotundis obtusissimis disco brevioribus; paleis receptaculi obtusissimis. — Oahu and Maui. Achenia generally less winged than in the preceding.

L. SUCCULENTA, DC. (which Remy has collected both upon Nihau and Kauai), has the habit of *Eclipta*, and ranges between *L. australis* and *L. integrifolia.* The leaves are not absolutely glabrous; a lens shows some minute strigose hairs.

L. HETROPHYLLA (sp. nov.): suffruticosa, ramosissima, erecta, asperohispidula; foliis plerisque trifidis, segmentis oblongo-linearibus seu lineari-lanceolatis denticulatis nunc laciniatis vel inciso-pinnatifidis; involu-

cri squamis late ovatis sæpius acuminatis disco parum brevioribus; paleis receptaculi mucronatis. — Folia 1 – 3-pollicaria, nunc petiolata petiolis marginatis, nunc connato-amplexicaulia. — Maui. Pappus of 2 or 3 very short and squamellate awns or paleæ, which are somewhat coroniform concreted at their base.

L. TENUIFOLIA (sp. nov.): herbacea, erecta, gracilis, fere glabra: foliis pinnatipartitis, segmentis rhachique angustissime linearibus seu filiformibus integerrimis; involucri squamis lanceolatis discum adæquantibus; paleis receptaculi acutatis. — Oahu. The achenia are 2 – 4-angled, their angles sometimes slightly winged, or produced at the summit; and the pappus consists of 2 to 4 short and somewhat deciduous awns.

L. (APHANOPAPPUS) MICRANTHA (*Schizophyllum micranthum*, Nutt. *Aphanopappus Nuttallii*, Walp.): herbacea, minutim strigulosa; caulibus gracillimis ramosissimis diffusis; foliis tenuibus bi – tripinnatipartitis, segmentis parvis subcuneatis sæpe bi – trilobatis; capitulis parvis breve pedunculatis; involucri squamis exterioribus lineari-spathulatis laxis, interioribus oblongis; ligulis 2 – 3 ovalibus; fl. disci 6 – 8; acheniis apteris; pappo obsolescente. — Kauai (Atooi). Ovaries pubescent at the summit, as in *Lipochæta* generally, the short hairs, or part of them, apparently forming a minute coronulate pappus, of which only mere vestiges remain upon the mature short-obovate achenium. The exterior achenia are the most fertile, and turgid, 3 – 4-angled; the inner more compressed or lenticular; the central ones by no means always infertile.

L. (APHANOPAPPUS) REMYI (sp. nov.): herbacea, ramosissima, diffusa, cinereo-hirsuta; foliis oblongis petiolatis obtusis sæpius parce dentatis vel sublobatis, superioribus alternis; capitulis parvis subpaniculatis breviter pedunculatis; involucri squamis oblongis obtusis; ligulis 5 – 7 obovatis brevibus; acheniis radii præsertim ad angulos tuberculatis vel interrupte subalatis, disci inanibus; pappo obsoleto. — Oahu, Remy, no. 260.

L. (APHANOPAPPUS) LARICIFOLIA. *Macræa laricifolia*, Hook. f. *Trigonopterum Ponteni*, Anders. — Galapagos Islands.

GUNTHERIA MEGAPOTAMICA, Spreng. *Polypteris Brasiliensis*, Less. in Linnæa. *Cercostylis Brasiliensis*, Less. Syn. Compos. Sprengel's name for the genus, founded like Lessing's upon Sellow's specimens, and revived by Schlechtendal (Linnæa, 11, p. 4), is the earlier by several years, and nothing stands in the way of its restoration. The

genus is the representative, on the plains of Buenos Ayres, &c., of *Gaillardia* and *Agassizia* in the equivalent region of North America; and the three genera are very closely related. The style of the *Guntheria* is intermediate between that of these two related genera, from both of which it recedes in the want of rays, and of an involucellate coma around the achenia.

Var. SCABIOSOIDES: foliis pinnati- vel sub-bipinnati-partitis. *C. scabiosoides*, Arn. in DC.

RAILLARDIA, Gaud. — Although the rays of the pappus are setæ instead of paleæ, the true place of this genus is next to *Dubautia*, among the *Heleniеæ*. It differs from *Dubautia* chiefly in the slender and truly plumose setæ of the papus, the absence of chaff to the receptacle (which is convex or obtusely conical and pubescent) and in the nearly valvately uniserial involucre, the scales of which connive or lightly cohere into a cylindrical cup. These two genera, with *Argyroxiphium* and *Wilkesia* (a connecting link between *Argyroxiphium* and *Dubautia*) are the striking, characteristic, and wholly peculiar shrubby or arborescent Compositæ of the Sandwich Islands, especially of their high mountain region or elevated lava plains. The present collection contains specimens of the four published species of *Raillardia*, in such perfection and variety as to enable me to characterize them properly, and also five others. Some of these are so polymorphous — after the fashion of the characteristic plants of those Islands — that, at the first view of the collection, one would be disposed to double the number of species here admitted. The species now known may be arranged as follows, under three sections; of which the third, by its nervose leaves and more numerous flowers in the capitula, most approaches the genus *Dubautia*.

§ 1. *Venoso-reticulatæ.*

1. RAILLARDIA LATIFOLIA (sp. nov.): foliis oppositis planis amplis oblongis penninerviis reticulato-venulosis dissitis subpetiolatis cum ramis elongatis patentibus glaberrimis; capitulis 4–5-floris numerosissimis in panicula nuda composita effusa. — Island of Kauai. A rambling shrub.

§ 2. *Uninerviæ, aveniæ.*

2. RAILLARDIA SCABRA (DC.): humilis; caulibus floridis ($\frac{1}{2}$–2-ped.) gracilibus superne parce foliatis fere herbaceis e basi decumbente fruticosa ramosa; foliis plerisque alternis linearibus uninerviis supra vel

undique hispidulo-scabris marginibus revolutis haud raro parce dentatis, inferioribus confertissimis reflexis; capitulis plurimis paniculato-corymbosis 5 – 7-floris. — Var. β. HISPIDULA: gracilior, foliis anguste linearibus utrinque hispidulis. γ. LEIOPHYLLA: foliis anguste linearibus lævigatis vel superne obsolete marginibusque hispidulo-scabris. — Hawaii and Maui.

3. RAILLARDIA LAXIFLORA (DC.): ramis etiam floridis ligneis sæpius foliosissimis; foliis latiuscule linearibus seu lanceolatis planis vel marginibus (scabris nunc denticulatis) parum revolutis uninerviis crassis supra lucidis scaberulis seu lævigatis patentibus serius reflexis, plerisque ternato-verticillatis, superioribus sæpe alternis; panicula subsimplici laxa; capitulis plerumque longe pedicellatis 6 – 13-floris. — Hawaii. Intermediate between the preceding and the following, apparently very different, species.

4. RAILLARDIA CILIOLATA (DC.): ramosissima; ramis usque ad apicem confertissime foliosis ligneis; foliis lanceolatis lineari-oblongis vel obtuse lanceolato-subulatis crassis uninerviis infra convexis seu carinatis supra concavis vel marginibus (semper hispidulo-ciliatis scabrociliolatisve) leviter involutis lucidis oppositis ternisve plerisque arrectis seu erectiusculis et secus ramos steriles imbricatis; capitulis paucis subracemosis 5 – 12-floris. — Variat foliis vernicoso-lucidis vel opacis, lævigatis scaberulis vel hispidulis, et (in extremis), β. LAXIFOLIA: foliis patentibus subplanis minus crebris. γ. JUNIPEROIDES: foliis minoribus involuto-canaliculatis quasi acerosis confertissimis imbricatis; capitulis subsolitariis. — Hawaii.

§ 3. *Nervosæ.*

* Folia plana, 3 – 11-nervia, omnia opposita vel plerumque terna, subpatentia vel patentissima, nunc denticulata.

5. RAILLARDIA LINEARIS (Gaud.): orgyalis; ramis laxis patentibus; foliis confertiusculis lanceolatis linearibusve 3 – 5-nerviis utrinque vel basi attenuatis glabris vel sericeo-puberulis; paniculis compositis polycephalis nudis; capitulis cymuloso-fasciculatis 3 – 7- (raro 12-) floris. — Oahu, Hawaii, and Maui.

6. RAILLARDIA MENZIESII (sp. nov.): ramis rigidis usque ad apicem conferte foliosissimis; foliis ellipticis seu lanceolato-oblongis arcte sessilibus 3 – 5-nerviis scabro-hirsutulis (nunc lævigatis); panicula subsimplici; capitulis pedicellatis 7 – 15-floris. — Variat foliis laxiusculis subpatentibus seu confertis fere imbricatis, oblongo-lanceolatis seu

ovato-ellipticis, opacis hirsutulis vel nitidis glabratis, marginibus hispidulo-ciliatis. — Hawaii and Maui.

7. **Raillardia platyphylla** (sp. nov.): fruticosa; ramis validis conferte foliosissimis; foliis oppositis lanceolato-ovatis e basi semiamplexicauli ad apicem sensim angustatis subacutis 7 – 11-nerviis undique scaberrimis, junioribus glanduloso-viscosis; panicula nuda; capitulis 10 – 20-floris. — Variat foliis angustioribus oblongo-lanceolatis ternis. — Maui. Leaves 2 or 3 inches long, commonly an inch wide next the base.

8. **Raillardia arborea** (sp. nov.): trunco 20-pedali; ramis validis conferte foliosis; foliis elliptico- seu elongato-oblongis utrinque obtusissimis arcte sessilibus 3 – 5-nerviis glanduloso-scabridis, junioribus viscoso-pubescentibus; panicula basi foliosa cum involucro 9 – 14-phyllo 25 – 45-floro hirsutis et glanduloso-viscosis. — Hawaii, on Mouna Kea. Leaves 1½ to 2 inches long.

* * Folia pl. m. concava, erecto-imbricata, terna, leviter vel infra obsolete 3 – 5-nervia.

9. **Raillardia struthioloides** (sp. nov.): caule arborescente; foliis secus ramos imbricato-confertis oblongo- seu elliptico-lanceolatis acutiusculis arcte sessilibus cinereo-hispidulis vel scabridis, junioribus hirsuto-ciliatis; panicula seu racemo simplici; involucro 6 – 9-phyllo 12 – 20-floro. — Hawaii, on Mouna Kea, with the preceding and higher. Leaves 1½ to 2 inches long.

DUBAUTIA, Gaud. — The best published description is that of Lessing, who rightly ascribed to *D. plantaginea* a couple of paleæ on the receptacle. These, overlooked by Hooker and Arnott, and therefore, it would seem, ignored by De Candolle and Endlicher, are generally if not always present whenever the flowers are more numerous than the scales of the involucre, subtending the flowers which are not subtended, and their achenia embraced, by the involucral scales. In *D. laxa*, accordingly, these paleæ are more obvious, and still more striking are they in a new species with many-flowered heads, which is moreover remarkable for its truly paleaceous, instead of aristiform, pappus. As the old species need diagnoses as well as the new, I append the characters of all of them.

1. **Dubautia plantaginea** (Gaud.): foliis glabratis glabrisve elongato-lanceolatis sensim acuminatis basi modice angustatis; capitulis parvis 7 – 10-floris numerosissimis in ramos divergentes folioso-bracte-

atos paniculæ thyrsoideæ magnæ congestis; receptaculi parvi paleis 1 – 3; corollæ tubo gracili limbo abrupte campanulato duplo longiore pappi sordidi paleas aristiformes barbellatas subsuperante. — Oahu and Hawaii. — In Gaudichaud's original specimens the inflorescence is undeveloped, so that his plate gives no idea of the ample, thyrsoid, compound panicle, the divaricate primary branches of which are sometimes six inches long, nor of the great number of the small heads. The leaves, also, are represented as much too broad at the base.

2. Dubautia læVIGATA (sp. nov.): foliis oblongo-lanceolatis deorsum longe attenuatis quasi petiolatis ultra medium argute serratis laxe inconspicue plurinerviis nitidis ramisque glaberrimis; panicula thyrsiformi pedunculata nuda; receptaculo parvo. Flores desunt. — Kauai, Sandwich Islands. Incompletely known; possibly a variety of the foregoing.

3. Dubautia laxa (Hook. & Arn.): foliis glabratis vel strigoso-hispidis oblongo-lanceolatis rariusve ovali- seu cuneato-oblongis antice argute serrulatis acuminatis deorsum longe attenuatis; capitulis 10 – 15-floris parvulis in cymam brevem congestis; corolla paleas pappi (mox rufi) subulato-aristiformes serrato-fimbriolatas vix superante, tubo glanduloso. — Oahu. Badly named, the inflorescence being less lax than that of *D. plantaginea* in fully developed specimens.

4. Dubautia paleata (sp. nov.): foliis strigoso-hispidulis lato lanceolatis utrinque vix angustatis sessilibus; capitulis 12 – 30-floris corymbosis paucis majusculis (5 – 6 lin. longis); receptaculo elevato paleis pluribus onusto; corollæ tubo pappi paleas lanceolatas margine eroso-denticulatas superante, fauce vix ampliata, limbo 5-partito. — Kauai, Sandwich Islands.

Argyroxiphium and Wilkesia. The characters of the latter genus, and of a new species of *Argyroxiphium*, with the announcement that this had a circle of paleæ at the margin of the receptacle, — and epappose ray-achenia enclosed in the involute subtending scales of the involucre, and therefore belonged to the *Madieæ*, — were published by me, in the Proceedings of the Academy (Vol. II. p. 160), a dozen years ago. These notes appear to have escaped attention. Having now further to add that the paleæ of *Argyroxiphium* are concreted into a cup, in the manner of several *Madieæ*, — so that, indeed, *Wilkesia* may be viewed as an *Argyroxiphium* with the ray-flowers and the subtending involucre suppressed, — it is worth while to reproduce the characters with emendations.

WILKESIA, Gray.

Capitulum homoganum, multiflorum. Involucrum campanulatum, 14 – 28-dentatum, hinc inde subincisum, herbaceo-membranaceum, dentibus villoso-ciliatis. Receptaculum convexum, nudum, glabrum. Flores hermaphroditi, conformes. Corollæ tubulosæ, glabræ, e tubo gracili cyathiformes, lobis 5 brevibus recurvis. Antheræ ecaudatæ. Styli rami revoluti, cono hispidulo complanato apice subulato superati. Achenia elongata, compresso-quadrangulata, ad angulos seu costas hispidula. Pappus paleaceus, persistens, uniserialis, paleis 8 lanceolato-subulatis hirto-ciliatis. — Arbuscula? Sandwicensis, Yuccæformis; caule simplici orgyali seu biorgyali; foliis lineari-gladiatis summisve lanceolatis coriaceis crebre nervulosis præter margines tomentoso-ciliatos glabris (nascentibus sericeis) in verticillos propinquos polyphyllos congestis et per baseos pl. m. coadunatis; pedunculis gracilibus glandulosis 1 – 5-cephalis ex axillis fol. supr. ortis paniculam laxam amplam efficientibus; capitulis post anthesin nutantibus.

Wilkesia gymnoxiphium, Gray, l. c. — Kauai, Sandwich Islands, alt. 3,700 feet.

ARGYROXIPHIUM, DC.

Capitulum hemisphæricum, heterogamum, multiflorum; fl. radii uniserialibus ligulatis fœmineis, disci hermaphroditis tubulosis. Involucrum uniseriale, squamis numerosis (tot quot ligulæ) discum subæquantibus angustis convolutis achenia radii involventibus. Receptaculum convexum vel conicum, inter radium et discum gerens paleas uniseriales gamophyllas, ceterum nudum. Ligulæ breves, plerumque tridentatæ. Corollæ fl. herm. glabræ, e tubo gracili sursum ampliatæ, 5-dentatæ. Antheræ ecaudatæ; filamenta sub apice articulata. Styli rami lineares, fl. herm. cono complanato hispidulo superati. Achenia elongata, glabra, 4 – 5-angulata angulis costæformibus, radii incurva, aut omnia præter coronulam brevem calva, aut disci pappo persistente, e paleis paucis valde inæqualibus subconcretis, superata. — Herbæ? insignes, Sandwicenses, 3 – 6-pedales; caule simplici percrasso foliis angustis pugioniformibus plerumque sericeo-argenteis confertissimis undique horrente, panicula ampla laxius foliata terminato; pedunculis viscoso-pubescentibus; capitulis nutantibus; floribus radii luteis, disci roseo-purpureis.

1. A. Sandwicense, DC.: ligulis 12 – 16 longiusculis; styli fl. disci ramis breviter obtuseque appendiculatis; acheniis disci inæqualiter

paleaceo-papposis; receptaculo convexo. — Hawaii, alt. 6,300 – 12,000 feet.

2. A. MACROCEPHALUM (Gray in Proceed. Amer. Acad. 2, p. 160): capitulo sesqui-bipollicari; ligulis 20 – 30 brevibus; styli fl. disci ramis cono acuto superatis; pappo nisi coronula brevissima disciformi nullo; receptaculo conico. — Maui, above 9,000 feet.

ABROTANELLA (CERATELLA) SUBMARGINATA (sp. nov.): pulvinato-cæspitosa; foliis crebris linearibus e basi erecta patentibus sursum leviter calloso-marginatis truncato-obtusis vel retusis; capitulis solitariis subsessilibus paucifloris; involucri squamis subuninerviis; acheniis obsolete 3 – 4-nervatis angulatisve inferne hirtellis pappo coroniformi et pauci-aristulato vel dentato superatis. — Orange Harbor, Fuegia. — In foliage nearly intermediate between *A. emarginata* and the following species, in general appearance very like *A.* (*Ceratella*, Hook. f.) *rosulata*, but the leaves smaller and narrower. Heads and flowers nearly as in *A. emarginata*, but with a rather conspicuous pappus, consisting of a thin and scarious coronula, two to four teeth of which are commonly extended into short awns. — Nothing is less reliable, at least generically, than distinctions founded upon the presence, degree of development, or absence of a paleaceous, coroniform, or other reduced kind of pappus. Dr. Hooker will not be surprised that this and the following species demand the reduction of his *Ceratella*, *Trineuron*, and therefore *Scleroleima*, to *Abrotanella*.

ABROTANELLA (CERATELLA) LINEARIFOLIA (sp. nov.): laxe cæspitosa; foliis linearibus seu lineari-subspathulatis immarginatis patulis, supremis capitulum pedunculatum adæquantibus; involucri squamis ovalibus sub-2 – 3-nervatis; floribus fœmineis 2 – 3, hermaphroditis 6 – 8 stylo pl. m. bifido, omnibus sæpissime fertilibus; acheniis glaberrimis elongato-obovatis 4-costatis apice subcontractis pappo obscure cupulato truncato nunc sub-4-dentato nunc plane 4-aristulato superatis. — Orange Harbor, Fuegia. — With the aspect and foliage (although on a rather smaller scale) of *A. spathulata* (*Trineuron*, Hook. f.) this has the floral characters of *A.* (*Ceratella*) *rosulata*, except that the flowers are all fertile; and as to the pappus, it is intermediate between *Ceratella* and *Scleroleima*.

ARTEMISIA AUSTRALIS, Less. Frutex!

Var. *a*. ESCHSCHOLTZIANA: foliis adultis subtus canescentibus supra glabratis, lobis planis sæpius parce incisis. — Oahu and Kauai.

Var. β. MAUIENSIS: foliis utrinque incanis, vetustissimis glabrescentibus, divisionibus lobisque plerumque filiformibus integerrimis. — Crater of Maui.

LUCILIA, Cass., remanded to the *Gnaphalieæ* by Remy, and rightly described as to the pappus by Weddell, ought to include *Belloa*, too slightly distinguished by the papillose instead of silky achenia, as is *Merope*, by the at length spreading, instead of connivent, scales of the involucre. In some specimens they appear neither to spread nor to connive. — Nuttall's *Gnaphalium depressum*, described from Pichincha specimens of Professor Jameson's collection (no. 642 and 57) is not the *G. radians*, Benth. i. e. *L.* (*Merope*) *Kunthiana*, but apparently the *L. conoidea*, Wedd., or near it, although larger. *L. gnaphalioides*, Less. includes *L. argentea*, Hook. & Arn., in which, by a typographical error of the Prodromus, the heads are said to be three-flowered in place of thirty-flowered.

LUCILIA (MEROPE) PIPTOLEPIS, Wedd., a form with more caulescent sterile shoots from the Peruvian Andes.

LUCILIA (MEROPE) SCHULTZII (*Gnaphalicum evacoides*, Schultz Bip. and *Merope Schultzii*, Wedd.), a depressed, pulvinate plant, with the habit of *Silene acaulis*, has glabrous achenia.

LUCILIA (MEROPE) PICKERINGII (sp. nov.): cano-tomentosa, multiceps, depressa; caulibus confertis uncialibus foliatis; foliis spathulatis seu obovatis planis dense undique lanuginosis; capitulis subsolitariis sessilibus cylindraceis; involucri squamis interioribus linearibus obtusiusculis badiis discum æquantibus; acheniis minutim papillosis. — Var. β.? MINOR: condensata, pube appressa, capitulis minoribus aggregatis. — High Andes of Peru.

ANTENNARIA § MNIODES. — Plantæ andicolæ, musciformes, densissime pulvinato-cæspitosæ, cinereo-tomentosæ; foliis obovatis squamæformibus creberrimis arcte imbricatis; capitulis solitariis in apice ramulorum inter folia sessilibus fere absconditis: dioica.

1. ANTENNARIA (MNIODES) ANDINA (sp. nov.): foliis lingulato-subcuneatis fere truncatis retusisve utrinque pilis longis crebris villoso-crinitis; involucri squamis lineribus obtusis; acheniis glabris; pappi setis fl. masc. apice subito valde clavato-incrassatis. — Alpamarca, high Andes of Peru. Also collected by Hænke, in the same region. Forming cushion-like perennial tufts, like those of *Leucobryum*, and of the related *Maja*, Wedd. Flowers as in *Antennaria*.

2. ANTENNARIA (MNIODES) ARETIOIDES (*Baccharis aretiodes*, Schultz Bip., *Merope aretioides*, Wedd. Chlor. And. t. 25), from the Andes a little farther south, has more obovate, less truncate, and much less villous leaves, papillose sterile ovaria (fertile plant not known), and the bristles of the male pappus very gradually and moderately thickened upwards. These distinctions are derived from Weddell's figure and description, and from a small specimen of no. 1823 of Lechler's collection, kindly communicated by Dr. Schultz. But what he has communicated under the same name, from Hænke's *reliquiæ*, is plainly the *A. andina*.

WERNERIA, H. B. K. This interesting and now rather polymorphous andine genus, like its analogue *Senecio*, is either radiate or discoid, the rays either yellow, white, or rose-color; the branches of the style are either truncate, or, in a few species, tipped with a setiform appendage. In one remarkable species the receptacle is alveolate; in one or two the leaves on the branches, or some of them, are opposite; in several there are five abnormal nerves to the disk-corollas, occupying the axis of the lobes, as in De Candolle's *Mesogramma;* but this is an inconstant character. The collection of the Exploring Expedition comprises the following species, viz.: —

WERNERIA NUBIGENA, H. B. K., including, with Weddell, *W. disticha* and *graminifolia*, but not *W. rigida* (misprinted *frigida* by De Candolle), which is apparently the larger form of *W. pumila*.

WERNERIA ORBIGNYANA, Wedd., var. BREVIRADIATA: involucri laciniis 10 – 14 ligulas breves adæquantibus; foliis sæpius integerrimis. — High Andes of Peru, near Casa Cancha. This, which I had formerly named *W. nuda*, is perhaps *W. nubigena* var. *caulescens, leioscapa*, Wedd. l. c.

WERNERIA VILLOSA (sp. nov.): rhizomate repente; caule florifero gracili simplici usque ad capitulum parce folioso villoso-lanato; foliis angustissime linearibus primum villosis mox glabratis, summis brevibus filiformibus capitulum bracteantibus seu involucrantibus, radicalibus obtusis deorsum longe attenuatis, basi dilatata scariosa intus fulvo-crinita; involucro 12 – 15-fido, lobis lineari-lanceolatis margine scariosis; ligulis exsertis; styli ramis apice truncato penicillato-hispidis; achenio glabro. — High Andes of Peru near Alpamarca. — To be compared with *W. staticæfolia*, Wedd., especially the var. *celmisioides;* but that is said to have the branches of the style subulate, &c.

WERNERIA PYGMÆA, Gillies, including *W. Rhizoma*, Remy, *W. mi-*

nima, Walp., *W. graminifolia*, Benth., *W. brachypappa*, *cherlerioides*, and *apiculata*, Schultz Bip. Andes of Chili and of Peru.

WERNERIA CÆSPITOSA, Wedd., which was long ago collected by Dombey, on the high Andes of Peru.

WERNERIA CARNULOSA (sp. nov.): acaulis, cæspitosa, parva (pollicaris), undique glabra; rhizomate crasso fere lignoso ramoso; foliis confertissimis linearibus vel spathulatis brevibus integerrimis obtusissimis carnosis capitulum sessile vix æquantibus; involucro 12-lobo, lobis tubo parum brevioribus lineari-oblongis obtusis apice ciliolatis; ligulis nullis; acheniis glabris; antheris luteis. — High Andes of Peru.

WERNERIA STRIGOSISSMA (sp. nov.): cæspitosa, subpollicaris; rhizomate ramoso crasso repente; foliis rosulatis brevibus spathulatis integerrimis capitulum sessile fulcrantibus cum involucro 10 – 14-fido strigosissimis; vaginis crinitis; ligulis exsertis; styli ramis apice truncato hispidulo penicillatis et appendice setacea auctis; achenio pubescente; pappo rigidulo. — High Andes of Peru near Casa Cancha. Bristles of the leaves themselves denticulate, or the larger ones resolved above into a tuft of slender hairs.

WERNERIA CILIOLATA (sp. nov.): cæspitosa, ramosissima, depressa, glaberrima; ramis brevibus confertissime foliosis; foliis (sæpe oppositis) linearibus subcomplicatis vel canaliculatis acutiusculis subcarnosis sub lente spinuloso-ciliolatis; capitulis sessilibus; involucro cylindraceo pluricostato 8-fido, lobis triangulato-lanceolatis obtusis subscariosis, costa valida; ligulis paucis brevibus; styli ramis truncatis apiculo brevi vel obsoleto; acheniis glabris. — High Andes of Peru, near Alpamarca.

WERNERIA DIGITATA, Wedd. A scanty specimen was collected along with the preceding and the succeeding species, exhibiting some minor discrepancies from Weddell's description. The leaves bear some woolly hairs; their lobes are incrassated, although far less so than in the following, and are blunt, instead of acute; a few of them are truly opposite. Involucre costate or nerved; the divisions 13 to 20, scarcely if at all longer than the tube. The branches of the style, as well in the ray as in the disk, sometimes bear a conspicuous, slender, setiform appendage (either naked or sparingly setulose); sometimes this is obsolete, or not distinguishable from the coarse hairs of the truncate obtuse summit.

WERNERIA DACTYLOPHYLLA, Schultz Bip. This extraordinary species was first detected by Dombey. On account of the habit, the

appendage of the style, and the alveolate receptacle, I was disposed to regard this (as was Dr. Schultz) as the type of a new genus, sustaining to *Gynoxys* the relation which *Werneria* does to *Senecio*. But all these characters break down; that of the style is inconstant even in the same species; the closely allied preceding species has a naked receptacle; and in this the alveoli vary, being sometimes very deep and here and there irregularly extended into scarious fimbrillæ, some of them even half the length of the flowers; while in Dombey's own specimens, in the Parisian herbarium, the receptacle is only moderately alveolate.

SENECIO LEUCOMALLUS (sp. nov.): fruticosus, ramosus, undique albo-lanosissimus; ramis 1 – 3-cephalis ad apicem usque foliosis; foliis spathulatis integerrimis obtusis planis (denudatis glabratis aveniis); capitulis breviter pedunculatis; involucro lanosissimo, bracteolis lineari-subulatis squamas proprias subæquantibus; ligulis nullis; acheniis glaberrimis. — Var. *β.* INCISUS: caulibus laxis adscendentibus; foliis plerisque apice 3 – 5-lobatis vel inciso-dentatis. — Orange Harbor, Fuegia. Related to *S. Patagonicus*, Hook. & Arn., of which *S. Andersonii*, Hook. f. and *S. Duyausii*, Hombr. & Jacquinot are forms.

SENECIO WEBSTERI, Hook. f., var. SUBDISCOIDEUS: ramis adscendentibus; foliis flabellatis grosse crenato-dentatis, basi nunc truncata nunc late cuneata; ligulis paucis parvis tubo brevioribus. — Orange Harbor, Fuegia.

SENECIO DARWINII, Hook. & Arn., var. ERADIATUS: pumilus, condensatus; foliis parvis; ligulis nullis. *S. Laseguei*, Homb. & Jacquinot? With the preceding.

SENECIO EIGHTSII, Hook. & Arn., in its more luxuriant states shows indications of being only another variety of *S. Darwinii*.

SENECIO TRIFURCATUS, Less., is stoloniferous, a character not mentioned in any published description; but a young stolon is delineated on one specimen in Dr. Hooker's excellent figure.

SENECIO SUBCANDIDUS (sp. nov.): herbaceus vel basi frutescens, laxe arenoso-lanatus; caule mox glabrato erecto sesquipedali apice corymboso; foliis membranaceis, caulinis oblongis ovato-subcordatis vel subdeltoideis grosse duplicato-dentatis crenatisve supra glabratis subtus tomentoso-incanis, petiolo sæpius alato; capitulis in corymbo 3 – 9 longe pedicellatis; involucro circiter 20-phyllo glabrescente (squamis linearibus) basi bracteolis brevibus subulatis parce calyculato; ligulis elongatis; acheniis sericeo-puberulis. — Ludit foliis sinuatis et, var. MINOR: caule subaphyllo oligocephalo; foliis lyrato-pinnatifidis seu pinnatipar-

titis, petiolo basi sæpius stipulato-appendiculatis. — Andes of Peru near Obrajillo. Also crest of Purruchucha, by Matthews, and in some part of Peru by Pavon.

SENECIO GRACILIPES (sp. nov.): herbaceus, pruinoso-pubens; caule erecto simplici pedali parce foliato oligocephalo; foliis membranaceis, inferioribus longissime graciliter petiolatis ovatis subrotundisve sinuato-5–7-lobatis lobis denticulatis, superioribus parvis paucis pinnatifidis petiolo basi aurito-dilatatis; capitulis longiuscule pedunculatis discoideis; involucro parce bracteolis setaceis calyculato 20-phyllo, squamis lineari-lanceolatis dorso hirtellis; acheniis minutim hirtellis. — Andes of Peru, near Obrajillo.

SENECIO RICHII (sp. nov.): herbaceus, glaber; caule erecto gracili apice corymboso polycephalo; foliis angustissime linearibus plerumque laciniatis vel pinnatipartitis; capitulis parvis discoideis pedicellatis; involucro parce minutimque bracteolato 12–13-phyllo, squamis lanceolatis obtusiusculis; acheniis hirtellis. — Var. β.? foliis latioribus, lobis lanceolatis; ramis floridis patentibus. — With the preceding.

SENECIO PICKERINGII (sp. nov.): fruticosus, humilis, ramosissimus, glaber; ramulis brevibus rigidis, floriferis capitula 1–3 sub-pedicellata sæpius nutantia gerentibus; foliis crebris linearibus seu lineari-oblongis sessilibus subcarnosis grosse pinnatifido-dentatis rariusve integris; bracteolis calyculi ovatis seu obovatis squamis involucri 10–12 late oblongis triente brevioribus; ligulis nullis; acheniis glabris; pappi setis barbellulatis. — Var. β.? foliis minus carnosis magis incisis; capitulis minoribus; bracteolis squamisque involucri angustioribus. — High Andes of Peru, between Culluay and Casa Cancha, &c.

SENECIO DANÄI (sp. nov.): suffruticulosus, cæspitoso-depressus, glabratus; foliis crebris carnosulis linearibus inciso-3–5-dentatis subpinnatifidis vel integerrimis primum cum caule apice subaphyllo monocephalo lanulosis; capitulo nutante discoideo; involucri squamis 14–16 lato-linearibus obtusis cum bracteolis calyculi dimidio brevioris dorso nigro-pubescentibus; acheniis cinereo-puberulis. — Alpamarca, high Andes of Peru.

SENECIO DICLINUS, Wedd. This collection contains male as well as female specimens, as also does the Hookerian herbarium, in specimens collected by Mr. McLean. The female flowers have imperfect anthers; the male have a style like that of the female, only its branches are minutely papillose externally, as in Weddell's *S. iodopappus*. The style in the female flowers, instead of resembling that of

the hermaphrodite blossoms of Senecio generally, imitates that of the ray-flowers of the genus.

SENECIO EVACOIDES, Schultz Bip., is also in the present collection, but with a pappus the bristles of which are indistinctly, if at all, barbate at the apex.

SENECIO PELLITUS (sp. nov.): subdioicus? manus, herbaceus, surculosus, acaulescens, undique pilis longis sericeis dense crinitus; foliis rosulatis obovatis vel subrotundis integerrimis sub-3–5-nerviis in petiolum brevem attenuatis; scapo brevi vel subnullo monocephalo; involucro 20-phyllo ecalyculato; ligulis nullis; floribus creberrimis; styli ramis obtusis (nec truncatis) hirtulis; acheniis glabris; pappo rigidulo. — High Andes of Peru near Casa Cancha. The flowers in the specimens are structurally hermaphrodite; but the anthers bear very little pollen, and the style resembles that of the female flowers of *S. diclinus*, &c., to the same group with which this species evidently belongs.

SENECIO WERNERIOIDES, Wedd. Chlor. And. I. p. 128, t. 19.

Var. β. EXSCAPUS: capitulo inter folia rosulata creberrime pinnatifido-dentata sessili. — Alpamarca, high Andes of Peru.

Var. γ. SCAPOSUS: scapo multibracteato 3-pollicari folia spathulata simpliciter dentata subæquante. — At a lower elevation, between Culluay and Obrajillo.

Bilabiatifloræ.

ONOSERIS ODORATA, Hook. & Arn. To this species (which includes *O. Cumingii*, Hook. & Arn.) belongs the *Cursonia Peruviana* of Nuttall. The bristles of the pappus, said by De Candolle to be biserial, are better described by Don as in a triple order, the innermost much larger and stouter, the outermost very short.

HYALIS ARGENTEA, Don. The receptacle is naked, with broad areolæ, between which one or two minute setulæ may often be found; these hardly answer to the character "fimbrillis callosis singulis sub achenio singulo." Pappus no more connate at the base than in all the allied genera, pluriserial, the bristles denticulate. Tails of the anthers plumose with cobwebby hairs. A more remarkable addition to the generic character, — one which rather militates against Weddell's group of *Plazieæ*, — is that the corollas, although more commonly uniform and bilabiate, are not rarely, in one or more of the flowers of the head, deeply and equally five-parted, the lobes narrow and revolute, — in this and in some other respects indicating an affinity with Weddell's genus *Aphyllocladus*.

CHÆTANTHERA PERUVIANA (sp. nov.): annua, tenella, diffuse ramosa; foliis lineari-cuneatis vel spathulatis versus apicem spinuloso-dentatis laxe villosis mox glabratis, summis angustioribus circa capitulum confertis; involucri squamis subscariosis retusis, exterioribus ovalibus, costa in appendicem nunc folioformem producta, interioribus lineari-oblongis sæpe mucronulatis; ligulis linearibus fere glabris involucrum vix superantibus, labio interiori parvo brevi apice bidentato. — Andes of Peru, above Baños. Near *C. tenella:* the first species detected north of Chili.

ORIASTRUM COCHLEARIFOLIUM (sp. nov.): pulvinatum, laxe arachnoideo-lanatum; foliis in caules breves confertis imbricatis sessilibus crassis obtusissimis muticis dorso mox glabratis intus sub margine incurvo concavis lanuginosis, inferioribus oblongis, superioribus spathulatis capitulum sessile arcte rosulato-cingentibus; involucri squamis omnibus scariosis, apice radiante colorato ovato-lanceolato acuto rigidiori; pappi setis capillaribus rigidis basim versus parce barbellulatis superne fere lævibus. — Alpamarca, high Andes of Peru. A very distinct species, interesting from its extending the range of the genus farther north than before. Ray-flowers perhaps fertile; their linear ligule obscurely tridenticulate at the apex, and with two minute teeth at the base on the inner side, representing the lower lip. Mature achenia unknown. — Those of *O. Chilense*, Wedd., are pyriform; the papillæ of their surface when soaked swell into a jelly, and then the achenium appears as if glabrous. Its pappus in the ray-flowers, generally of two or three caducous bristles, is sometimes wholly wanting; that of the disk-flowers is nearly uniserial, the bristles united at the base into a ring. They are finer and softer than in *O. pusillum;* but it is not worth while on this account to keep up *Aldunatea* as a section. — *O. pusillum* has abortive stamens in the ray-flowers, not before noticed, still more approximating the genus to *Tylloma* and *Egania*, which last might well enough be referred to *Oriastrum*, and even both, perhaps, back to *Tylloma.*

A serious error in transcription vitiates Weddell's amended character of *Oriastrum*, i. e. the achenia of the disk, instead of those of the ray, are said to be glabrous and effete; those of the ray, instead of those of the disk, papillose and fertile.

JUNGIA FERRUGINEA (Linn. f.): scandens vel sarmentosa; foliis 5 – 9-lobatis subtus pannoso-villosis; capitulis 5 – 10-floris glomerulatis, glomerulis in corymbos vel thyrsos congestis; squamis involucri

interioribus paleisque arcte involutis flores et pappum subæquantibus; acheniis glabris. Bogota, Mutis? Holton. Quito, Jameson, Couthouy, &c.

JUNGIA PANICULATA (*Dumerilia paniculata*, DC. *Jungia ferruginea*, Don et auct., non Linn. f. *J. spectabilis*, Less., non Don.): fruticosa; foliis subtus tomentosis, tomento albido implexo; capitulis conferte cymosis plerisque pedicellatis multifloris; involucri squamis interioribus paleisque floribus "luteis" pappoque subdimidio brevioribus; acheniis pilosiusculis. Petioli nunc nudi nunc basi quasi stipulati. — Peru. — I suppose (although I cannot now verify the supposition) that Linnæus received his *J. ferruginea*, along with most of the new species from "America Meridionali" described in the Supplement, from Mutis, therefore probably from Santa Fé de Bogota, where Dr. Holton collected what is manifestly the Linnæan species. In this species the individual heads, only 5 – 10-flowered, are commonly so closely clustered in fascicles as to explain, if not to justify, the view taken by the younger Linnæus of a compound capitulum. The Peruvian species referred by Don to *J. ferruginea* is quite different. De Candolle's (but not Don's) *J. spectabilis* is the same as his *Dumerilia paniculata* without the stipular appendages, which are inconstant.

PEREZIA. Dr. Schultz goes too far when he refers the Mexican and North American species of this extensive genus to *Trixis*. In the former even the fewest-flowered species have a gradated imbricate involucre and erostrate achenia. The latter has a uniserial involucre, the scales all of the same length, with or without a circle of spreading, mostly foliaceous bracts.

To *Trixis frutescens* I refer *T. paradoxa*, Cass., *T. cacalioides*, Don, and *T. Neæana*, DC. *T. angustifolia*, DC., which is probably a narrow-leaved form of the older *T. corymbosa*, Don, is known by the linear-lanceolate scales of the involucre gradually tapering to a point, the margins of the leaves usually revolute. *T. obvallata*, Hook. & Arn. probably belongs to *T. longifolia*, Don.

Cichoraceæ.

ACHYROPHORUS CHONDRILLOIDES (*Oreophila chondrilloides*, Don in herb. Hook. *Seriola Brasiliensis*, subvar. b., Hook. & Arn. Comp. Bot. Mag. I. p. 30): glaucescens, undique glaberrimus, radice fusiformi; caule folioso stricto mono-oligocephalo; pedunculis elongatis; foliis subcarnosis lineari-lanceolatis integerrimis seu obsoletissime

denticulatis, superioribus subamplexicaulibus, imis in petiolum basi dilatatum sensim angustatis; involucri squamis lanceolatis subacutis. — Rio Negro, North Patagonia, in saline soil.

Achyrophorus sessiliflorus (*A. Quitensis*, Schultz Bip. Wedd. with *A. Humboldtii* and *albiflorus*, Schultz), a widely variable species, must include not only *A. sonchoides*, DC. (the most caulescent form), but also a

Var. β. barbatus (*A. barbatus*, Schultz Bip. Rev. Crit.): minor; involucri phyllis exterioribus superne pl. m. setosis.

Var. γ. subruncinata (*A. setosus*, Wedd. & *A. eriolænus*, Schultz Bip.): foliis runcinato-dentatis vel incisis margine sæpius setuloso-ciliatis; involucri phyllis exterioribus oblongis seu obovatis dorso setosis vel nudis. Ludit, 1, involucro tomentoso, 2, foliis rhombeo-ovatis longius petiolatis.

Achyrophorus stenocephalus, Gray (including *A. taraxacoides* Wedd.) is perhaps only an extreme variety of the preceding. Meyen's specific name was *taraxacifolia*, which Walpers, perhaps accidentally, changed to *taraxacoides*, which name both Weddell and Schultz cite under *A. Meyenianus* (which is most probably a form of *A. sessiliflorus*) as well as under the present species, showing some confusion, to avoid which I have retained the appropriate name of *A. stenocephalus*.

Picrosia longifolia, Don. The pappus is fulvous and soft, not fragile, and the genus is probably nearest related to *Pyrrhopappus*.

Fitchia nutans, Hook. f. Of this curious arborescent Cichoracea Professor Dana collected a single specimen on the mountains of Tahiti, which is about 25 degrees of longitude farther east than Elizabeth Island, where it was discovered by Mr. Cuming. The single capitulum in the collection being male adds nothing for the completion of the character of the genus. The plant from which it was taken is said to be a tree, with yellow flowers.

2. *Notes on Lobeliaceæ, Goodeniaceæ, &c. of the Collection of the U. S. South Pacific Exploring Expedition.* By Asa Gray.

Lobeliaceæ Sandwicenses. The Sandwich Islands are remarkable for their arborescent, shrubby, or fleshy-stemmed Lobeliaceæ. The species are numerous and peculiar, but very difficult to investigate in herbaria, owing to the imperfection of materials in collections and to the injuries from insects to which these and other lactescent plants are especially liable. There are moderately good materials extant in different collections of ten or eleven species, and indications of almost an equal number; while many others doubtless remain to reward the labors of future explorers of the forest region of Hawaii, a large part of which lies still untrodden by the naturalist. Exclusive of three true Lobelias, and of a striking new *Isotoma?* of Kauai or Nihau in Remy's collection, the known species of the Sandwich Islands may all be referred to Gaudichaud's genera *Delissea*, *Cyanea*, and *Clermontia*, three genera which also shade off into each other in a somewhat troublesome manner. The only essential character of Gaudichaud's genus *Rollandia*, viz. the adnation of the stamineal tube with one side of the tube of the corolla, is as I suppose a mistake. At least it does not occur organically in flowers of the plants which well accord with the (now flowerless) specimen of *R. lanceolata* collected in Freycinet's voyage, upon which Gaudichaud founded the genus, nor, I believe, in the plant which answers to his more miserable specimen of *R. crispa.* The former is a good *Delissea;* the latter, having larger and somewhat foliaceous calyx-lobes, is one of the species through which *Delissea* graduates into *Cyanea.* To the latter genus we may confidently refer Presl's *Macrochilus* (*Lobelia?*) *superba*, Cham., of which the calyx-lobes are probably incorrectly said to be imbricated in æstivation, and also a new and most remarkable arborescent species, which by its extremely long and apparently petaloid calyx-lobes, equalling the corolla in length, approaches *Clermontia;* but these divisions are perfectly separate down to the ovary, almost filiform, spreading in anthesis, and not deciduous. Our *Delisseæ* are: —

1. Delissea lanceolata. *Rollandia lanceolata*, Gaud. Bot. Voy. Freyc. *R. montana* on the plate, the upper leaves reduced in size. *R. lanceolata* var. *grandifolia*, A. DC. Prodr. is really just the type of the species, which Gaudichaud characterizes as having "foliis magnis."

2. Delissea clermontioides, Gaud. Bot. Voy. Bonite, t. 47, which may probably also be *D. Kunthiana*, t. 77, and even *Rollandia Humboldtiana*, of the same author, t. 76.

3. Delissea Delessertiana. *Rollandia Delessertiana*, Gaud. l. c. t. 75. We have what may be a variety of this species, *pinnatiloba*, from Kauai.

4. Delissea coriacea (sp. nov.): fruticosa, glabra; foliis amplis (pedalibus et ultra) oblongo-lanceolatis coriaceis repando-serrulatis basi

acutis longiuscule petiolatis, venulis conspicue reticulatis; racemis plurifloris petiolum haud superantibus; calycis limbo obsoleto seu dentibus 5 minutis instructo; corolla pollicari subcurvata. — Kauai, Remy.

Var. *β*. foliis spathulato-lanceolatis in petiolum brevem longe attenuatis. — Crater of East Maui. Fruit as large as a cherry.

5. DELISSEA OBTUSA (sp. nov.): suffruticosa; ramis junioribus floribusque undique pubescentibus; foliis (5–6-pollic.) membranaceis oblongis serrulatis apice vel utrinque obtusis subtŭs parce pubescentibus; racemis plurifloris petiolum gracilem haud superantibus; calycis limbo fere obsoleto; corolla gracili subpollicari incurva. — Mountains of Maui.

Var.? MOLLIS: caule crassiori; foliis elongatis (subpedalibus) oblongo-lanceolatis basi in petiolum breviusculum attenuatis supra puberulis subtus molliter pubescentibus; "floribus pollicaribus crassiusculis cæruleis." — Mouna Kea, Hawaii. — Possibly both may be varieties of the following.

6. DELISSEA ACUMINATA, Gaud. Bot. Freyc. p. 457, t. 76. — Oahu.

Var. ANGUSTIFOLIA: foliis elongato-lanceolatis aut angustatis aut latiusculis. *D.* (*Lobelia*) *angustifolia*, Cham., DC. — Oahu.

7. DELISSEA UNDULATA, Gaud., to which belongs *D. subcordata* of the same work; leaves with the base subcordate, obtuse, or acute being found on the same stem. The small protuberances on the tube of the corolla represented by Gaudichaud occur in all the forms, but are inconstant.

8. DELISSEA? PLATYPHYLLA (sp. nov.): caule fruticoso orgyali petiolisque tuberculis aculeisve conicis mollibus obsitis; foliis sesquibipedalibus obovato-oblongis repandis membranaceis glabris; pedunculis axillaribus brevibus crassis paucifloris: lobis calycis glabri brevissimis subulatis. — District of Puna, Hawaii. The port is rather that of *Cyanea*, and the resemblance to Gaudichaud's *Rollandia crispa* is not remote.

To *Cyanea*, Gaud., distinguished by the foliaceous or enlarged and persistent lobes of the calyx, I refer all the following: —

1. CYANEA GRIMESIANA, Gaud. l. c. t. 75. — Oahu. The corolla is variously stated to be "bluish rose-color," or "white striped with reddish-purple externally."

Var.? CITRULLIFOLIA: foliis bipinnatipartitis, segmentis sinuatis; caule aculeis conicis creberrimis horrido. — Mouna Roa and Mouna Kea, Hawaii. Flowers unknown.

2. CYANEA ASPERA (sp. nov.): foliis oblongo-ovatis acuminatis

denticulatis subtus ad venas venulasque ochraceo-hirtellis utrinque setulis basi papillatis asperis, petiolo muricato; calycis glabri lobis ovalibus obtusissimis foliaceis tubum elongato-obconicum æquantibus; corolla 2½-pollicari curvata. — Oahu. (Leaves of one or two seemingly allied species were collected, without flowers or fruit.)

3. CYANEA? PILOSA (sp. nov.): caule frutescente; foliis subpedalibus membranaceis obovatis utrinque acutis vel acuminatis eroso-crenatis pilis brevibus mollibus hirsutis; racemis brevibus in pedunculo 1–2-pollicari hirsutissimo paucifloris; floribus "parvis griseo-cæruleis" pedicellisque glabris; lobis calycis linearibus foliaceis ovario oblongo æquilongis. — Mouna Kea, Hawaii. This and the preceding are doubtless related to Chamisso's *Lobelia calycina*, *ambigua*, and *pinnatifida*, — obscure species, referred by Presl and De Candolle to *Delissea*, but by their foliaceous calyx-lobes apparently effecting a transition to *Cyanea*. The next species, of which materials are also incomplete, is equally ambiguous.

4. CYANEA? ROLLANDIA (*Rollandia crispa*, Gaud. *Lobelia calycina*, Cham.?): fruticosa; foliis sesqui-tripedalibus obovato-lanceolatis inferne longe attenuatis breviter petiolatis membranaceis fere glabris margine serrulatis undulatis vel integerrimis; pedunculo petiolum adæquante superne bracteato paucifloro; floribus cinereo-puberulis; calycis lobis oblongis seu lanceolatis foliaceis ovario æquilongis; corolla sesquipollicari; fructu pyriformi pollicari. — Oahu.

5. CYANEA TRITOMANTHA (sp. nov.): caule simplici arborescente orgyali; foliis lato-lanceolatis membranaceis subintegerrimis fere glabris basi acutis tripedalibus (incl. petiolo crasso 5–8-pollicari); floribus "confertis" magnis; calyce pubescente, lobis linearibus pollicaribus foliaceis ovario cylindraceo longioribus; corolla tripollicari extus tomentoso-pubescente in segmenta 3 longo-linearia mox divisa. — Mouna Kea, Hawaii.

6. CYANEA SUPERBA, *Lobelia superba*, Cham. *Macrochilus superbus*, Presl. — Oahu.

7. CYANEA LEPTOSTEGIA (sp. nov.): glabra; foliis ad apicem caulis simplicis arborei confertis lanceolatis subsessilibus integerrimis undulatis (bipedalibus et ultra); racemis brevissimis confertifloris; calycis segmentis prælongis e basi latiori angustissime linearibus patentibus corolla gracili longioribus persistentibus. — Upper edge of the forest near the tabular summit of Kauai. Calyx-lobes fully two inches long, and, except at their broader base, less than half a line wide!

Of *Clermontia*, Gaud., the specimens examined are reducible to two species, viz.: —

1. Clermontia grandiflora, Gaud., with its several varieties,

Var. *α*. brevifolia (*C. grandiflora*, Gaud. Bot. Voy. Freyc. p. 459, t. 73): foliis membranaceis ovalibus leviter obovatis ovatisve utrinque angustatis vel acutatis modice serratis bi-tripollicaribus, petiolo gracili pollicari. — The flowers are evidently amplified or exaggerated on Gaudichaud's plate.

Var. *β*. oblongifolia (*C. persicæfolia* and *C. oblongifolia*, Gaud. l. c. t. 71, 72): foliis oblongis seu elongato-oblongis sæpe obtusis deorsum attenuatis repando-serratis 4-6-pollicaribus, petiolo bi-tri-pollicari.

Var. *γ*. longifolia (*C. grandiflora*, Hook. & Arn. *C. Kakeana*, Meyen in Presl. Lob. *C. macrophylla*, Nutt. *C. macrocarpa*, Gaud. Bot. Voy. Bonite, t. 49. *C. viridis*, Gaud. ined. in herb. Mus. Par.): foliis subcoriaceis vel membranaceis oblongo-lanceolatis seu anguste oblongis creberrime serrulatis 3-9-pollicaribus basi in petiolum 1-2-pollicarem attenuatis.

2. Clermontia parviflora, Gaud. ined. (*C. oblongifolia*, Hook. & Arn., non Gaud. *C. Byroni*, *pyrifolia*, seu *parviflora*, Gaud. in herb. Mus. Par.): fruticosa, glabra; foliis membranaceis lanceolato- vel subspathulato-oblongis breviter acuminatis crebre repando-serrulatis; pedunculo paucifloro pedicellisque brevibus petiolum haud superantibus; floribus vix pollicaribus gracilibus leviter curvatis "cæruleis"; calyce breviter 5-lobo corollam hinc alte fissam æquante. — Hawaii (and Oahu?), first collected by Macrae.

There are three species of true, fleshy-frutescent Lobelias, viz.: —

1. Lobelia macrostachys, Hook. & Arn. Bot. Beech. Voy. p. 88; Gaud. Bot. Voy. Bonite, t. 46. — Oahu and Hawaii. Gaudichaud's plate exhibits flower-buds only. These when fully formed are 1½ to 2 inches long and mostly recurved; the developed corolla 2 or 3 inches long, "pale" or "white with the summit lilac."

2. Lobelia Gaudichaudii, A. DC.; Gaud. l. c. t. 45. — Oahu.

Var. Kauaensis: racemo puberulo; calycis viscosi lobis brevioribus, i. e. tubo paullo longioribus. — Kauai. "Corolla pale, with pink veins."

3. Lobelia neriifolia (sp. nov.): caule fruticoso crasso medulla farcto; foliis confertis elongato-linearibus utrinque angustatis in petiolum attenuatis coriaceis transverse venosis margine integerrimo revolu-

tis supra glabris subtus incanis; racemo virgato densifloro; bracteis lobisque calycis subulato-setaceis; corolla rectiuscula cærulea. — East Maui. Leaves a foot or less in length, only a third or half an inch long. Capsule dehiscent through the short and obtusely conical vertex.

Scævolæ Polynesiæ. The collection contains,

1. SCÆVOLA LOBELIA, Linn., De Vriese. Coast of all the coral islands, and of the Feejees, &c.

2. SCÆVOLA SERICEA, Forst., of which *S. plumerioides*, Nutt., of the Sandwich Islands, is a variety with ample and almost glabrous leaves. Tonga, Samoan Islands, &c.

3. SCÆVOLA CORIACEA (Nutt.): fruticosa, decumbens; axillis brevissime barbatis; foliis parvulis carnoso-crassis obovato-spathulatis in petiolum brevem attenuatis aveniis sæpe retusis; pedunculis axillaribus uni- (raro tri-) floris; calycis limbo truncato vel obscure quinquelobo; corollæ lobis lineari-lanceolatis, alis angustis. — Sandwich Islands.

Var. α. (*S. coriacea*, Nutt. in Trans. Amer. Phil. Soc. n. ser. 8, p. 253): cinereo-puberula vel glabella; foliis integerrimis; corolla extus glabra vel pilosula, lobis intus piloso-barbatis. — Kauai and Maui, on sand-hills.

Var. β. corolla intus imberbi extus foliisque glabris. — Nihau, Remy.

Var. γ. foliis cinereo-tomentulosis apice 3 – 5-denticulatis; corolla extus pubescente, lobis intus glabris. — Molokai, Remy. — To this species probably belongs the Sandwich Island specimen referred by De Vriese to *S. montana*, Labill.; but that species is an upright shrub, with well-developed calyx-lobes.

4. SCÆVOLA GAUDICHAUDI, Hook. & Arn. (non *Gaudichaudiana*, Cham.), includes *S. montana*, Gaud., non Labill., and apparently *S. Menziesiana*, var. *glabra*, Cham. It will probably prove to be only an extreme form of the following polymorphous species; but it has a less developed inflorescence, narrower and somewhat fleshy-thickened, nearly veinless, more entire, and smaller leaves, a more slender and usually glabrous corolla, &c. The flowers of this and the following species are white, not yellow as De Vriese implies. De Vriese's genus *Temminckia*, founded on these Sandwichian species, is said to differ from *Scævola* in the inflorescence not being cymose, nor the filaments bearded, nor the fruit fleshy (baccate). But it would be difficult to find a more purely cymose inflorescence than in these species whenever the peduncle is several-flowered; the filaments are equally beardless in the original and perhaps in every known species of *Scævola*, and the mature fruit is a baccate drupe.

5. SCÆVOLA CHAMISSONIANA, Gaud. (a form with pubescent corolla), Hook. & Arn., Cham. (corolla, &c. glabrous), clearly includes *S. Menziesiana*, Cham. (excl. var.), a small-leaved form, either glabrous or pubescent; *S. ciliata*, G. Don; *S. ligustrifolia*, Nutt. l. c. (a form with small and almost entire leaves); *S. pubescens*, Nutt. l. c.; *S. pubescens*, Gaud. in the Paris herb. (with the younger leaves beneath and the inflorescence softly pubescent, the corolla externally pubescent); *S. intermedia*, Gaud. l. c. (with the corolla and the lanceolate nearly entire leaves glabrous); *S. Dielliana*, Gaud. l. c., with larger, puberulent, and sparingly serrate leaves, the peduncle elongated. All are forms of one species, which has more veiny and toothed leaves than the foregoing, mostly slender and often several-flowered peduncles, and broader, broadly wing-margined lobes to the corolla.

6. SCÆVOLA MOLLIS, Hook. & Arn., of Oahu, also on Kauai with the leaves not so downy, is well marked by the soft and dense canescent pubescence or close tomentum of the lower surface of the large, oblong-lanceolate leaves, short-peduncled inflorescence, and outside of the corolla. The latter has not a particularly long tube, nor are its lobes unusually pointed.

7. SCÆVOLA (CAMPHUSIA, De Vr.) GLABRA, Hook. & Arn. The limb of the more or less curved yellow corolla is nearly equally five-cleft, although some of the lobes are apt to be conglutinate; and the anthers are normal for the genus. The connective is similarly produced in the following species, and, as figured by Labillardiere, in *S. montana*.

8. SCÆVOLA FLORIBUNDA (sp. nov.): fruticosa, orgyalis; ramis puberulis mox glabratis, axillis vix barbatis; foliis lanceolato-oblongis subspathulatis submembranaceis repando-dentatis obscure penninerviis glabris basi attenuata sessilibus vel subpetiolatis; cymis multifloris ex axillis supremis et terminali thyrsum amplum efficientibus; calycis lobis ovatis oblongisve ovario brevioribus; corolla extus incana, lobis intus glabris oblongis; stylo glabro; indusio ciliato extus piloso. — Feejee Islands, where it was also collected by Professor Harvey.

Of *Campanulaceæ* the only thing of interest is

WAHLENBERGIA PERUVIANA (sp. nov.): hirtella, humilis; caulibus ramosis diffusis; ramis usque ad apicem foliosis; foliis alternis parvis spathulatis subintegerrimis sessilibus, summis florem bracteantibus; calycis tubo hemisphærico hirsuto lobis oblongis brevioribus; corolla brevi-campanulata ultra medium quinquefida; capsula semisupera, parte libera conico trivalvi. — Andes of Peru above Baños.

3. *Enumeration of a Collection of Dried Plants made by L. J. Xantus, at Cape San Lucas, &c. in Lower California, between August,* 1859, *and February,* 1860, *and communicated to the Smithsonian Institution.* By ASA GRAY.

Such scanty knowledge as we have hitherto possessed of the botany of Lower or Peninsular California was nearly all supplied by the notes and hasty collection made by the late Mr. Hinds, in the voyage of the British surveying ship Sulphur, which touched at the Bay of Magdalena, Cape San Lucas, &c., late in the autumn of 1839. These notes, and an account of the collection, with descriptions of the new species by Mr. Bentham, were published in the Botany of the Voyage of the Sulphur, in 1844. The present collection was made by the indefatigable Mr. Xantus, at San Lucas and the vicinity, while in the employment of the U. S. Coast Survey in charge of a station for tidal observations. Small as this collection is, it contains not a few novelties, and I trust is an earnest of many more. Where the coast furnishes so large a percentage of new species, the interior, and especially its mountains, may be expected to yield a richer harvest to future explorers. Mr. Xantus has already made one successful visit to the mountains within his reach, with very interesting zoölogical results. At the same time he made a good botanical collection, which has most unfortunately been lost.

The numbers in the ensuing list are those under which the specimens have been distributed, as far as the extent of the collection allowed, among leading herbaria, the full set being reserved for the national collection in charge of the Smithsonian Institution.

1. ARGEMONE MEXICANA, Linn.

2. LYROCARPA COULTERI, Hook. & Harv. in Lond. Jour. Bot. 4, p. 76, t. 4. — Radix annua. Folia inferiora cordato-oblonga, repanda, petiolo longo submarginato, superiora brevi-petiolata, dentata vel incisa. Petala latiora quam in exemp. Coulterianis, elongato-spathulata, rosea? post anthesin purpurascentia. Fructus haud maturus.

3. POLYGALA XANTI (sp. nov.): nana, cinereo-pubescens; caulibus adscendentibus e caudice perenni usque ad racemum densiflorum foliosis; foliis ovalibus subaveniis breviter petiolatis; floribus (majusculis) mox recurvis; pedicellis bractea sepalisque angustis æquilongis; alis ovali-oblongis; carina imberbi; fructu ovato sinu profundo emarginato

pubescente. — Caules vix spithamæi, simplices. Folia 4 – 6 lin. longi. Flores 3 lin. longi, albi luteo et purpureo tincti: corolla basi valde gibbosa: stamina 8.

3ª. POLYGALA PUBERULA, Gray, Pl. Wright. 1, p. 40; floribus minoribus.

4. IONIDIUM FRUTICULOSUM (Benth. Bot. Voy. Sulph. p. 6, t. 2): var. DENTATUM: caulibus herbaceis 9-pollicaribus; foliis lanceolatis seu linearibus, majoribus argutissime dentatis. — This must belong to Bentham's *I. fruticulosum*, a bad name; for in our plant the stems are wholly herbaceous, and I am not sure that the indurated and stout root is really perennial. The leaves vary from linear to broadly lanceolate, and the larger ones especially are beset with sharp salient teeth. The short peduncles, flowers, &c., accord with the published character and figure.

5. DRYMARIA FRANKENIOIDES, H. B. K. Nov. Gen. & Sp. 6, p. 21, t. 515; Torr. in Mex. Bound. Surv. 2, p. 36. *Spergularia rupestris*, Benth. Bot. Voy. Sulph. p. 17? non Camb. The leaves are narrower than in the figure above cited, and the small intermediate lobes of the petals are three instead of four; otherwise there is no obvious difference, and No. 698 of Coulter's Mexican collection (from Zimapan) is intermediate in appearance. Without examining the petals the plant might naturally be taken, as I suppose it was by Bentham, for a *Spergularia*.

6. DRYMARIA CRASSIFOLIA, Benth. Bot. Voy. Sulph. p. 16. *D. polycarpioides*, Gray, Pl. Fendl. p. 12.

7. TRIANTHEMA MONOGYNA, Linn.; Gray, Pl. Wright. 1. p. 15.

8. SIDA ELLIOTTI, Torr. & Gray, var.? Gray, Pl. Wright. 2, p. 21. Frutescens.

9. ABUTILON CALIFORNICUM, Benth. Bot. Voy. Sulph. p. 8; var. foliis sublobatis discoloribus.

10. SPHÆRALCEA INCANA, Torr. in Gray, Fl. Fendl. p. 23, & Bot. Mex. Bound. p. 39. One of the less canescent forms.

11. HIBISCUS (BOMBICELLA) RIBIFOLIUS (sp. nov.): fruticosus, humilis, fere glaber; stipulis setaceis persistentibus; foliis rotundatis subcordatis crenato-dentatis sæpe trilobis chartaceo-membranaceis venulis reticulatis; pedunculis axillaribus unifloris folio longioribus sub apice articulatis; involucello 8 – 9-phyllo, phyllis lineari-setaceis calycis lacinias ovato-lanceolatas subsuperantibus corolla (purpurea?) triplo brevioribus capsulam subglobosam æquantibus; seminibus in loculis

plurimis laxe crinitis. — Caulis subpedalis. Folia semi-sesquipollicaria. Corolla sesquipollicaris. — Most allied perhaps to *H. phœniceus;* but the leaves are all rounded and obtuse, mostly lobed, and resembling those of a Ribes, the corolla much exceeding the calyx and involucel, &c. The young stems and petioles are slightly pubescent; the leaves perfectly glabrous.

12. GOSSYPIUM, foliis omnibus integris cordato-ovatis, Benth. l. c. — Like the specimens noticed by Bentham from the same district, destitute of fruit. The leaves of one specimen, however, begin to show lobes. It is probably a cultivated Cotton run wild.

13. MELOCHIA TOMENTOSA, Linn. "A common West Indian and Central American species, of which this is probably the northern limit."

14. KALLSTRŒMIA GRANDIFLORA, Torr. in Pl. Wright. 1, p. 28: var. DETONSA, Gray.

15. GALPHIMIA ANGUSTIFOLIA, Benth. Bot. Voy. Sulph. p. 9, t. 5. Apparently *G. linifolia*, Gray, Gen. Ill., is the same species, which extends across the continent on the southern border of the U. S.

16. KARWINSKIA HUMBOLDTIANA, Zucc.; Gray, Pl. Wright. 1, p. 32. (= Berland. coll. no. 820, 889, 689, 906, 2340, 2359, 1230, &c.)

17. MAYTENUS PHYLLANTHOIDES, Benth. Bot. Voy. Sulph. p. 54. This has also been found on the eastern side of the continent, on the lower part of the Rio Grande, and at Key West.

18. CARDIOSPERMUM MOLLE, H. B. K.? A single specimen without fruit.

19. CARDIOSPERMUM? sp. nov. A shrubby species, with the habit of Bentham's *Cardiospermum tortuosum,* from the same district, but wholly glabrous and with a different foliage; the fruit unknown, and therefore the genus uncertain.

20. DODONÆA VISCOSA, Linn.? Destitute of flowers or fruit.

21. BURSERA MICROPHYLLA (sp. nov.): foliolis 14-16-jugis cum imparri 2-3 lin. longis oblongo-linearibus seu oblongis obtusis sessilibus in rhachi superne marginata; pedunculis 2-3-floris brevibus. — (In Sierras Tulè, Sonora, leg. A. Schott, ex herb. Torr.) Frutex rigidus. Folia ad apicem ramulorum brevissimorum conferta. Flores hermaphroditi, an polygami? Petala 5. Stamina 10. Discus 5-lobus. Ovula ex cl. Torrey in loculis solitaria suspensa. Cotyledones contortuplicatissima. — Mr. Schott collected this with a few flowers and young fruit. Mr. Xantus, with fruit only, which is that of a *Bursera.*

22. DALEA CHRYSORHIZA (sp. nov.): pilosula; caulibus perplurimis e radice annua? filiformibus procumbenti-diffusis; foliolis 7–10-jugis parvis (sesquilineam longis) obovato-linearibus emarginatis subtus nigro-glandulosis; stipulis minimis; pedunculis folia superantibus apice capitato-plurifloris; calycis pubescens dentibus oblongo-linearibus obtusis tubo fere æquilongis. — Radix perpendicularis, ut videtur annua, cortice aurantiaco. Caules pedales et ultra, tenues, parce pilosuli. Spicæ breves circiter 12-floræ; rhachi inter flores glandulis? singularibus fusiformibus acutis obsita. Calyx inter costas glandulosus, lobis cum bractea ovata calyce breviori foliaceis glandula acuta apiculatis. Corolla brevis, violacea. Legumen pilosulum. — A well-marked species of this large, prevailingly North Mexican genus.

23. PHASEOLUS FILIFORMIS, Benth. Bot. Voy. Sulph. p. 13. But the whole plant is puberulent. The root is certainly annual.

24. PHASEOLUS (MACROPTILIUM) ATROPURPUREUS, DC. Fl. Mex. Ic. ined., & Prodr. 2, p. 395; Torr. in Mex. Bound. Surv. 2, p. 50; var. SERICEUS. I do not possess any specimen of Dr. Torrey's *P. atropurpureus*, which, described as a new species, may well be identical with its homonyme of De Candolle. Our South California specimens are identical with those of Mr. Schott, from the Rio Grande, dubiously appended to this species by Dr. Torrey, only they are for the most part still more silky-downy. The plant is of the section *Macroptilium*, but has a short calyx. The wings are deeply colored. The root is perennial.

25. COURSETIA? GLANDULOSA (sp. nov.): foliis ramisque glabratis, petiolo in setam desinente, foliolis ellipticis mucronatis; racemis sæpe fasciculatis sessilibus brevibus plurifloris cum calyce viscoso-glandulosis. — Rami tortuosi, nodosi, nascentes cinereo-villosi. Stipulæ setaceæ, persistentes. Foliola 7–9-juga, haud stipellata, petiolulata, 6–9 lin. longa, 3–4 lin. lata, parce appresso-puberula, mucrone conspicuo. Flores ex axillis foliorum annotinorum orti; racemi brevissimi sæpius bini vel terni; pedicelli conferti, 3 lin. longi. Bractæ parvæ, caducæ. Calyx ebracteolatus, breviter campanulatus, 5-fidus, pilis capitato-glandulosis viscosus; lobis triangulari-lanceolatis acutis, 2 superioribus paullo brevioribus et connatis. Corolla ut videtur pallide lutea; vexillum latissimum, emarginatum, basi biauriculatum, auriculis parvis; carina obtusa alis paullo breviori. Stamina diadelpha; antheræ conformes. Ovarium subsessile, lineare, glanduliferum, 10–12-ovulatum, continuum. Stylus gracilis a medio ad apicem subunilateraliter villosus: stigma capitatum. Legumen ignotum.

26. STYLOSANTHES VISCOSA, *Sw.* (*S. glutinosa,* H. B. K.): var. ACUTIFOLIA.

27. CROTALARIA LUPULINA, DC.

28. CÆSALPINIA MEXICANA (sp. nov.): inermis, glabra; pinnis 3–4-jugis cum impari; foliolis 4–5-jugis; racemis plerumque simplicibus laxis; filamentis inferne villosis petala flava vix superantibus; ovario canescente; legumine glabrato acinaciformi 5–6-spermo. — Var. *α.* foliolis venosis. In Nueva Leon et Chihuahua, Mexico, Berlandier, no. 941, 2371, Gregg, Eaton & Edwards. Var. *β.* CALIFORNICA: foliolis plerumque aveniis, coll. Rich. no. 4, & coll. Xantus. — Foliola 6–9 lin., in var. Calif. 3–7 lin. longa, oblongo- vel subrotundo-ovalia. Alabastra 3 lin. longa. Sepala intus sericeo-puberula. Petala 4–5 lin. longa, glabra, suberosa. Legumina acinaciforma vel cultriformia, plana, sesqui–bipollicaria, in spec. Berland. magis oblonga rectiuscula. — This has long been extant in several collections, but we have only now, with the complete specimens of Xantus, fit materials for description.

29. MIMOSA XANTI (sp. nov.): Eumimosa, fruticosa, cinereo-pubescens; ramis aculeis infrastipularibus vel sparsis rarisve armatis: pinnis unijugis; foliolis 5–9-jugis oblongis supra velutino-puberulis subtus canescenti-pubescentibus et præsertim ad margines rhachique strigoso-setulosis; capitulis globosis; bracteolis hispidis corollam quadrifidam æquantibus; calyce parvo hyalino setoso-ciliato. — Legumen ignotum. Pinnæ petiolo duplo longiores. Foliola 3–4 lin. longa, inæquilatera, pennivenia, hinc nervo laterali percursa, setulis validioribus incumbentibus quasi marginata. Pedunculi solitari vel bini, monocephali, semipollicares. — Apparently a well-marked species of the *Castæ* or *Pectinæ* subdivision, not described in Bentham's monograph.

30. LYSILOMA MICROPHYLLA, Benth. in Lond. Jour. Bot. 3, p. 83, & Pl. Hartw. p. 345. Legumen generis, 3–6 poll. longum, 5–8 lin. latum, stipite 2–3 lin. longo. — Berlandier's no. 3144, coll. distributed by Dr. Short, is a Lysiloma, in fruit, belonging to Mr. Bentham's second division; compared with Hartweg's no. 75, in flower only, it appears to be the same species. Therefore the character of *L. desmostachys* may be completed as follows: — Legumen lineari-oblongum, 6–7-pollicare, 1½–2 poll. latum, substipitatum.

31. CALLIANDRA CALIFORNICA, Benth. Bot. Voy. Sulph. p. 14, t. 11. Only a fragment, depauperate, with the pinnæ reduced to a single pair. Stamens bright red.

32. LEUCÆNA MACROPHYLLA, Benth. l. c. p. 90? In fruit only; doubtful if Bentham's plant, which was collected at Acapulco, and in flower only. From the pod and the look of the foliage it may be an *Albizzia.*

33. ACACIA FLEXICAULIS, Benth. in Lond. Jour. Bot. 1, p. 505. In fruit.

34. ACACIA FARNESIANA, Willd. — Also foliage of another species, perhaps *A. Greggii.*

35. ŒNOTHERA SINUATA, Linn., var. HUMIFUSA, Torr. & Gray. Except that the flowers are larger, the specimens accord with those from the counterpart peninsula of Florida.

36. MENTZELIA ASPERA, Linn.

37. TURNERA PUMILEA, L.

38. FOUQUIERIA SPINOSA, Gray, Pl. Wright. 1, p. 76. *Bronnia spinosa,* H. B. K. Nov. Gen. & Sp. 6, t. 528; Benth. Bot. Voy. Sulph. p. 16. This was collected at Rayon in Sonora by Professor Thurber, but is not enumerated in the Botany of the Mexican boundary.

39. ECHEVERIA FARINOSA, Lindl. in Jour. Hort. Soc. 4, p. 292, ex Walp. Ann. Bot. 2, p. 669. *E. lanceolata,* Nutt.? sed floribus longe pedicellatis. — The broad-leaved Echeveria collected by Dr. Bigelow in Whipple's Exploration, and referred to *E. lanceolata,* Nutt., is evidently Lindley's *E. laxa.*

40. LORANTHUS. A species of the section *Notanthera, Oscillanthera,* indeterminable for want of foliage.

41. RANDIA ARMATA, DC.? In fruit only.

42. MITRACARPIUM LINEARE, Benth. Bot. Voy. Sulph. p. 20. The leaves vary from linear to lanceolate. Seeds as in *M. breviflorum,* which is probably a form of *M. lineare* with a smaller corolla.

43. HOUSTONIA (ANOTIS) ASPERULOIDES. *Hedyotis asperuloides,* Benth. Bot. Voy. Sulph. p. 19, t. 13. This nearly approaches some of the various forms of *H. angustifolia;* but the capsule is more clavate-turbinate and the seeds are smooth, not pitted.

44. PECTIS MULTISETA, Benth. Bot. Voy. Sulph. p. 20.

45. PECTIS (PECTIDIUM) PUNCTATA, Jacq. A single fragment, perfectly resembling the West Indian plant.

46. HOFMEISTERIA FASCICULATA, Walp. Repert. 6, p. 106. *Helogyne fasciculata,* Benth. Bot. Voy. Sulph. p. 20, t. 14. The leaves are less dissected than in the specimens figured, often cordate-orbicular and obtusely or obscurely lobed, or only crenate, others three-cleft. *H. ure-*

nifolia would seem to differ mainly in the greater number of setæ and paleæ of the pappus. *H. pluriseta* is more different, having much fewer involucral scales as well as flowers, the innermost of the former much broader, the bristles of the pappus, &c. more numerous. The slender and numerous interior scales of the involucre of *H. fasciculata* are deciduous with the flowers.

47. CARPHEPHORUS ATRIPLICIFOLIUS (sp. nov.): caule basi fruticoso; ramis patentibus; foliis oppositis hastatis vel triangulatis plerumque laciniato-dentatis petiolatis utrinque appresso-pubescentibus seu hirtellis; corymbis nudis polycephalis; capitulis circiter 20-floris pedicello brevioribus; involucri squamis oblongis, exterioribus brevioribus cinereo-pubescentibus, interioribus paleisque receptaculi fere scariosis; pappo plumoso albo; achenio piloso; corollis antherisque ut videtur flavidis. — Folia cum petiolo 4 – 6 lin. longo 1 – 2-pollicaria; floralia parva, sessilia. Pedicelli 4 – 8 lin. longi, glanduloso-puberi. Capitula semipollicaria. Involucrum floribus dimidio brevius, squamis leviter striatis obtusiusculis, interioribus glabris. Corolla e tubo brevi extus glandulifero infundibuliformis, glabra, lobis brevibus late ovatis siccitate flavis extus parce hispidulis. Antheræ semi-exsertæ. Stylus basi haud bulbosus; ramis planiusculis obtusiusculis minutim hirtellis. Pappi setæ circa 20, longe et molliter plumosus. — Without the paleæ on the receptacle, which subtend each flower and are rather persistent, this plant would be taken for a plumose *Brickellia*. It is a close congener of the other South Californian species, *C. junceus*.

48. PERITYLE CALIFORNICA, Benth. Bot. Voy. Sulph. p. 23, t. 15; forma biaristata, aristis achenio brevioribus. — The awns of the pappus are less barbellate as well as shorter than in the published figure, and uniformly two in the flowers examined. The achenium is broader than in any other species, being obovate-oblong, with the summit, bearing the pappus, narrow; when mature broadly obovate with a much thickened callous margin, more so than is represented in the figures, or than appears in the younger fruits; the corona of the pappus is much more delicate than is shown in the figure, and dissected into slender hyaline squamellæ.

49. SOLIDAGO (EUTHAMIA) DIFFUSA: laxe ramosissima, subglutinosa; foliis fere filiformibus subcanaliculatis; capitulis oblongis subclavatis; floribus disci 4 – 5, ligulis 0 – 2; alveolis receptaculi paucis longe paleato-productis. *Ericameria diffusa*, Benth. Bot. Voy. Sulph. p. 23. — "Fruticulus humilis" according to Bentham; but our specimens,

although they include not the root or base, seem to be herbaceous. I cannot doubt that the plant is a true congener of *Solidago* (*Euthamia*) *tenuifolia* and *lanceolata*, of which it has the habit (though more loosely branched), involucre, flowers, stigmas, &c. Only the flowers are fewer, and therefore also the fimbrillæ of the receptacle, which are more elongated, chaffy, and combined in the centre of the receptacle. Commonly, however, all the flowers are hermaphrodite and tubular, but one or two of the marginal ones are becoming liguliform and their stamens abortive. This adds another to the many intricate transitions among the Chrysocomeous genera which I have had occasion to notice. If, in any revision, *Euthamia* is adopted as a genus, it may well embrace *Bigelovia* of De Candolle.

50. APLOPAPPUS ARENARIUS, Benth. Bot. Voy. Sulph. p. 24. Folia ramealia oblonga vel lanceolata, caulina (præsertim inferiora) spathulata, magis inciso-dentata quam undulata (dentibus mucrone cuspidatis), ima nunc lyrato-subpinnatifida, majora pollicaria vel paullo longiora. — Mr. Bentham's specimens were probably older, and wanted the lower cauline leaves. In ours the stems are nearly or quite herbaceous.

51. BACCHARIS CÆRULESCENS, DC. Prodr. 5, p. 402. Same as the Northern Mexican plant.

52. BACCHARIS VIMINEA, DC. Prodr. 5, p. 400? This accords with what was named *B. Douglasii* in Whipple's Pacif. R. R. Exploration, and with specimens gathered in California by Fremont in 1845. Although allied to *B. Douglasii*, it is not the same, but I believe is De Candolle's *B. viminea*. The heads are larger and looser than those of *B. Douglasii;* the scales of the involucre broader, the outermost ovate, the innermost oval-lanceolate, smooth, and more scarious. The specimens of Xantus all have the heads diseased or monstrous, probably by the puncture of insects.

53. PLUCHEA SUBDECURRENS, DC.? var. PARVIFOLIA. Folia sesquipollicaria vel breviora, 2½ – 3 lin. lata, fere ad basin usque argute serrulata, basi in alas lineares decurrentia. — This is quite different from Hartweg's no. 112, and probably really belongs to *P. subdecurrens*.

54. FRANSERIA AMBROSIOIDES, Cav. Ic. 2, p. 79, t. 200.

55. FRANSERIA TENUIFOLIA, var. TRIPINNATIFIDA, Gray, Pl. Lindh. 2, p. 227, & Pl. Wright. 1, p. 104. *Ambrosia fruticosa* (excl. β.) and *A. confertiflora*, DC. Canescent forms.

56. FRANSERIA PUMILA, Nutt. A single specimen, without flowers; perhaps a dwarf and more canescent state of the preceding.

57. HYMENOCLEA sp. without flowers or fruit, the branches bearing abnormal growths, incited by the punctures of insects. Doubtless one of the two published species.

58. HELIOPSIS BUPHTHALMOIDES, Dunal. *H. canescens*, H. B. K. Forma minor.

59. ALDAMA UNISERIALIS, Gray, Pl. Lindh. 2, p. 228. Somewhat depauperate specimens, well agreeing with the Texan plant.

60. VIGUIERA DELTOIDEA (sp. nov.): herbacea, pubero-scaberula, ramosa; ramis polycephalis; foliis inferioribus oppositis, superioribus alternis, omnibus deltoideis vel subcordatis obtusis subintegerrimis longiuscule seu breviuscule petiolatis supra scabris subtus albido-pubescentibus; capitulis corymbosis; involucro biseriali disco breviori, squamis lineari-oblongis obtusiusculis canescentibus; receptaculo breviter conico, paleis latis mucronatis; acheniis præsertim ad margines longe villosis; pappi aristis breviusculis paleis intermediis latis bis terve longioribus. — Folia 1½ – 2 poll. longa, basi 1 – 1½ lata, trinervia; petioli 3 – 6 lin. longi. Pedunculi ½ – 2 pollicares. Capitula semipollicaria. Ligulæ 6 – 8, oblongæ, 10-nerves. Achenia matura fere 2 lin. longa: pappi paleæ ex angulis ortæ lanceolatæ, in aristam hispidam corolla breviorem productæ; intermediæ utrinque 2 latæ vel 1 latissimæ, truncatæ, subintegræ, firmæ, ⅔ lin. altæ. — A well-marked species. Plant apparently more than two feet high, the base of the stem not seen.

61. VIGUIERA TOMENTOSA (sp. nov.): fruticosa; foliis oppositis petiolatis subcordatis (raro subhastatis) sensim acuminatis serratis pube molli utrinque tomentosis subtus incanis; capitulis corymbosis; involucri discum subæquantis squamis 1 – 2-serialibus lanceolatis incanis; receptaculo parvo subconico, paleis lanceolatis muticis; acheniis villosis; aristas 2 longis et squamellas plures parvas gerentibus. — Frutex vel suffrutex ramosus, ramulis junioribus molliter pubescentibus. Folia (cum petiolo 3 – 6 lin. longo) 3 – 5-pollicaria, e basi leviter cordata (nunc truncata, raro hastata) sensim attenuata, argute serrata, basi trinervia; floralia parva, linearia. Pedunculi 1 – 3-pollicaria. Capitula quam præcedentis paullo minora. Ligulæ amplæ, pollicares, circiter 15-nerves. Pappi aristæ subulatæ, achenio æquilongæ; squamellæ intermediæ utrinque 4 – 6 angustæ vel 2 profunde 2 – 3-fida, laciniato-fimbriatæ, aristis multo breviores. — A true *Viguiera*, with the habit rather of *Oyedæa.*

62. COREOCARPUS HETEROCARPUS (sp. nov.): annua; foliis membranaceis punctatis bipinnatifidis, segmentis brevibus hinc inde dentatis; acheniis exterioribus obovatis ala pinnatisecta cinctis, interioribus longioribus clavatis plerumque exalatis nunc tuberculosis exasperatis, omnibus calvis. — Herba gracilis, pedalis, capitulis corymbosis, involucro 2 lin. longo, ligulis 2 – 4, lineas 3 longis. — I am confident that Bentham's *Coreocarpus parthenioides*, and his *Acoma dissecta*, along with the present plant, belong to one genus, for which, from its analogy to *Coreopsis*, the name of *Coreocarpus* may be preferred. Its nearest relationship is with *Leptosyne* on one hand, and, still more, with *Chrysanthellum* and *Heterospermum* on the other. In the next complete revision of the Bidentoid or Coreopsoid genera with fertile rays, I expect to see all these four and some others reduced to one (*Heterospermum*), which will be the analogue of *Coreopsis*, and about equally polymorphous in the achenia, &c. — Although the *Coreocarpus* (*Acoma*) *dissecta* is described as a "suffrutex," with linear entire lobes to the leaves, and the achenium with a narrow entire wing, yet I am not sure that it is really distinct from the present plant. The indurated stems and roots of some annuals of a dry region are not rarely described as fruticose; and the achenia of Bentham's plant, I suspect, were far from mature. Yet our specimens are those of a tender and slender annual, and even the ovaries show the rudiments of the lobed wing, which at maturity is dissected in the manner of most *Coreopsides* of the section *Coreoloma*, only more coarsely. The inner disk-achenia are longer and much narrower than the rest, are more or less roughened or tuberculate, and mostly quite wingless. The disk-corollas show a bearded ring at the summit of the proper tube. This Bentham describes, but the artist has neglected to delineate, in his *C. parthenioides*; on the other hand, the artist delineates the same thing in the *Acoma dissecta*, while it is not noticed in the description. Of the latter plant, also, the appendages of the style are described as "vix puberula," while the artist makes them hairy. In our plant these appendages are elongated linear-subulate and minutely hispid.

63. HETEROSPERMUM XANTI (sp. nov.): tenue, glabrum; foliorum segmentis paucis angustissime linearibus integerrimis; pedunculis filiformibus; involucri exterioris squamis haud ciliatis interiores vix æquantibus; ligulis 7 – 8 elongatis; acheniis radii calvis ala lobata, disci linearibus longiuscule biaristatis. — Only a single specimen was collected, of a slender annual, 6 or 7 inches high, hardly sufficient for

description, but interesting from the resemblance of the marginal achenia to those of the foregoing plant in the wing, as far as can be judged from the immature state. The disk-achenia, and indeed the whole structure, except the fertile achenia, accord with *Bidens*.

64. POROPHYLLUM GRACILE, Benth. Bot. Voy. Sulph. p. 29. The specimens accord with Bentham's description, except that the involucres are five or six (instead of four) lines in length. Into this my *P. Greggii* appears to pass, with involucres from six to eight lines in length, and with mostly rostrate achenia.

65. DYSODIA SPECIOSA (sp. nov.): fruticosa, glabra, valde ramosa; ramis apice nudis monocephalis; foliis oppositis trisectis, segmentis petiolulatis rotundatis argute inciso-dentatis vel trifidis lobis incisis dentatisve, dentibus nonnullis glandula grossa infraterminali instructis; involucro bracteis subulato-setaceis grosse uniglandulosis cincto, squamis linearibus subulato-acuminatis, ligulis involucrum longe superantibus; acheniis glaberrimis. — Frutex vel suffrutex ut videter ultra-bipedalis, ramis patentibus, ramulis floridis herbaceis gracilibus in pedunculum 1 – 3-pollicarem sub capitulo leviter incrassatum desinentibus. Foliola 4 – 6 lin. longa, membranacea, nunc rigidula, glabra vel tenuissime puberula, aut rotundata grosse inciso-dentata, aut 3 – 5-fida lobis argute incisis. Petioli et petioluli interdum lobulis dentibusve parvis 1 – 2 instructi. Capitulum fere pollicare. Bracteæ tenues, aristatæ, involucrum dimidio breviores. Involucri squamæ 17 – 20, rigidæ, sub acumine setaceo grosse uniglandulosæ, inferne glandulis 2 – 4 juxtamarginalibus elongatis sæpe notatæ. Ligulæ 14 – 16, conspicuæ, aurantiaceæ, oblongæ, semipollicares. Receptaculum breviter hirsutum. Pappus albus, 10-paleolatus, paleolis lato-linearibus 7 – 9-setosis. — A striking species, helping to connect *Clomenocoma* with *Dysodia*. But the involucre is as uniserial as in other *Dysodiæ*. So it also is in *D. montana* (*Clomenocoma montana*, Benth. Pl. Hartw. p. 86, 351), which Bentham is disposed to refer to *D. grandiflora* of De Candolle. It is, I think, distinct from, though strictly congeneric with, that species.

66. GNAPHALIUM LEUCOCEPHALUM, Gray, Pl. Wright, 2, p. 99.

67. MALACOTHRIX PARVIFLORA, Benth. Pl. Hartw. p. 321?

68. MACREIGHTIA INTRICATA (sp. nov.): tenuiter sericeo-puberula, mox glabra; foliis coriaceis cuneato-oblongis retusis leviter triplinerviis parvis (6 – 12 lin. longis). — Intricato-ramosus, ramulis rigidis. Pedunculi fructiferi 3 lin. longi, solitarii. Bacca globosa, magnitudine pruni, calyce crasso-coriaceo trilobo stipata, 6-sperma. — The flowers

are unknown ; but the plant must be a *Macreightia*, and the most northern species of the genus.

69. DICLIPTERA RESUPINATA, Juss.; Nees. in DC. Prodr. 11, p. 474; Torr. Bot. Mex. Bound. p. 125.

70. SERICOGRAPHIS CALIFORNICA, Gray in Torr. Bot. Mex. Bound. Surv. p. 125. *Beloperone Californica*, Benth. Bot. Voy. Sulph. p. 38. This is very variable in the foliage and pubescence; the leaves on some specimens less than an inch, on others over two inches long; the inflorescence, calyx, &c. sometimes cinereous-puberulent, sometimes conspicuously glandular-pubescent. The corolla is minutely puberulent or glandular. The pedicels vary from one to three lines in length. Sterile base of the capsule twice the length of the seed-bearing portion. Seeds turgid-lenticular, with a very smooth testa.

71. HYPTIS LANIFLORA, Benth. Bot. Sulph. p. 42, t. 20. The figure does not represent the wool of the calyxes and pedicels half dense enough : it forms a wide white *nimbus*, more than thrice the breadth of the enclosed flower, the hairs of which, moreover, are beautifully and dendritically branched. — *Hyptis Emoryi*, Torr., from the interior Californian desert, on the upper Colorado, is an allied species, but with furfuraceous-canescent and barely serrulate leaves, and the branched wool of the calyxes also short and furfuraceous.

72. HYPTIS TEPHRODES (sp. nov.) : herbacea ? erecta, pube brevissima molli undique canescens; foliis lanceolatis acutis obtuse serrulatis in petiolum brevem attenuatis, floralibus subulatis parvis; verticillastris plurifloris laxis approximatis in racemos vel spicas crebriores paniculatas confluentibus; bracteis minutis setaceis; calycibus cum pedicello subæquilongo lana brevi nivea dense vestitis, tubo æquali oblongo-campanulato dentibus setaceis æqualibus; corolla vix calyce longiore. — Folia utrinque tomento appressisimo albido mollia, obsolete venosa, caulina 2-pollicaria, 4 – 6 lin. lata; ramealia decrescentia linearia. Paniculæ floribundæ, aphyllæ. Calycis fructiferi tubo vix sesquilineam longo. — A well-marked species of this great genus, of the same section with *H. albida*, to which it is considerably related. In both the pubescence of the calyx is dendritic.

73. TOURNEFORTIA VELUTINA, H. B. K. Nov. Gen. & Sp. 3, p. 79, t. 201.

74. HELIOTROPIUM CURASSAVICUM, Linn.

75. ERITRICHIUM (RUTIDOCARYUM) HELIOTROPIOIDES, Torr. Bot. Mex. Bound. Surv. p. 140. *Antiphytum helitropioides*, A. DC. Prodr. 10, p. 122.

76. ERITRICHIUM ANGUSTIFOLIUM, Torr. in Pacif. R. R. Rep. 5, p. 363. Accords with no. 500 of Coulter's Californian collection, which is referred to this species by Dr. Torrey. No. 85 of a former collection of Xantus, made in the State of California, is a different species, near to or a variety of *E. crassisepalum*, Torr.

77. BUDDLEIA CROTONOIDES (sp. nov.): tomento albido denso; foliis e basi subcordata ovato-oblongis seu ovato-lanceolatis sensim acuminatis vel acutatis creberrime crenulatis, venis subtus prominulis reticulatis; ramis teretibus; panicula densa pyramidata; capitulis floribusque tomentosis sessilibus; corolla calycem vix superante. — Frutex. Folia 3 – 4-pollicaria, dense ac molliter tomentosa, tomento albo in costa venisque mox fulvello, venulis subtus conspicuis versus margines læte reticulatis. Corollæ sicut calyces extus dense tomentosæ. — Related to *B. Humboldtiana* and *B. cordata*, but distinct in the woolliness, the terete branches, &c. The tomentum probably falls with age from the upper face of the leaves.

78. EUSTOMA EXALTATUM, Griseb. in DC. Prodr. 9, p. 51.

79. QUAMOCLIT COCCINEA, Mœnch.

80. IPOMÆA (PHARBITIS) NIL, Roth.

81. IPOMÆA SINUATA, Ort. A form with the divisions of the leaves nearly entire.

82. JACQUEMONTIA ABUTILOIDES, Benth. Bot. Voy. Sulph. p. 34.

83. EVOLVULUS ALSINOIDES, Linn.

84. SOLANUM ELÆAGNIFOLIUM, Cav. Ic. t. 243; Dunal in DC. Prodr. 13, p. 290. *S. Hindsianum*, Benth. l. c.

85. PHYSALIS GLABRA, Benth. Bot. Voy. Sulph. p. 39. But the leaves are not thickish.

86. DATURA DISCOLOR, Bernh.; DC. Prodr. 13, p. 541. *D. Thomasii*, Torr. in Pacif. R. R. Rep. 5, p. 362, & Bot. in Mex. Bound. Surv. p. 155. *Stramonia Curassavica*, &c., Herm. Par. Bot. p. 233, cum ic. Cinereo-pubescens. Corolla quam *D. Stramonii* longior. Capsula mox nutans, aculeis gracilibus æqualibus pubescentibus ultrapollicaribus horrida. — I have little doubt that this is the West Indian *D. discolor*, although the name is not appropriate to it. The plant of Professor Thurber from Corralitas, mentioned by Dr. Torrey, is, I suppose, *D. quercifolia*, H. B. K., which has also been collected by C. Wright (no. 527) and others, on the Rio Grande in New Mexico. This bears an erect fruit, the spines of which are unequal (the larger an inch or more in length), compressed, and with dilated bases, glabrous or nearly so.

87. Nicotiana Mexicana, Schlecht. in Linnæa, 15, litt. p. 95? Belongs to the section *Tabacum;* perhaps the same as *N. caudata,* Nutt. Pl. Gamb.

88. Nicotiana ipomopsiflora, Dunal. (Moç. and Sesse. Ic. Mex.) in DC. Prodr. 13, p. 559. *N. Tabacam,* var.?? Benth. Pl. Hartw. no. 205. *N. trigonophylla,* Dunal. in DC. l. c. p. 562. "*N. multiflora,* Nutt. Pl. Gamb.?" (sed ubi?) Torr. in Pacif. R. R. Rep. 5, p. 362? — A common North Mexican species extending into the United States, rather variable, but well marked. When fully developed the fruiting racemes are long, virgate, and unilateral, and the corolla (6 or 8 lines long) is white or greenish-white, or yellowish, with a small five-angled border. The whole plant is viscid. It is no. 579 of Coulter's Californian, and 1255 of his Mexican collection. It occurs in Wright's first Texan-New-Mexican collection without a number (unless the number is lost from my set), in his later collection it is no. 1607. Wright also collected it in Texas as early as the year 1848; also Lindheimer, in his coll. 1850 (300), "*N. rupicola,* Lindh. mscr."; Dr. Gregg in Mexico (no. 61, and without a number); Thurber in Sonora (no. 987); and Dr. Bigelow in the interior of California. I believe it is also Berlandier's no. 1361, from San Louis Potosi; but the specimens (in fruit) are too poor to determine. No. 75 of Xantus's Fort Tejon collection is of a different but allied species, perhaps *N. sordida,* Lehm. I cannot find any "*N. multiflora*" in Nuttall's paper on Gambell's collection.

89. Lycium brevipes, Benth. Bot. Voy. Sulph. p. 40; Miers, Ill. S. Amer. Pl. 2, p. 117, t. 69.

90. Vallesia dichotoma, Ruiz & Pav. ex Benth. Bot. Voy. Sulph. p. 33. Leaves lanceolate-oblong, even the nascent ones glabrous.

91. Asclepias subulata, Decaisne?; Torr. in Pacif. R. R. Rep. 5, p. 362, t. 7, & Bot. Mex. Bound. p. 164.

92. Böerhaavia erecta, Linn. A slender form, not uncommon in Sonora, Western Texas, &c.

93. Böerhaavia spicata, Chois.?; Torr. in Bot. Mex. Bound. p. 171. This is most allied to *B. Wrightii.* The lowest leaves are ovate or oblong and obtuse, but the upper ones narrower and cuspidate-acute, often attenuate-acuminate, the margins mostly very undulate, the surfaces brown-dotted. Nothing is more variable than the size of the perianth in this genus. Instead of being small, as in the specimens

described by Dr. Torrey, in the present specimens when well expanded they are three lines in diameter; the fruit from 1¼ to 1½ lines long, usually obtuse, sometimes truncate at the summit; pedicels half a line or a line long. The stamens are 3 or 5.

94. ERIOGONUM ANGULOSUM, Benth. in Linn. Trans. 17, t. 18.

95. ANTIGONON LEPTOPUS, Hook. & Arn. Bot. Beech. Voy. p. 308, t. 69. In some specimens all the upper leaves are subsessile, and the rest short-petioled. Sepals rose-red.

96. STEGNOSPERMA HALIMIFOLIUM, Benth. Bot. Voy. Sulph. p. 17, t. 12. In flower and fruit. But the kernels of the mature seeds have been destroyed by insects, so that the form of the embryo cannot be made out. The ovary shows the rudiments of the dissepiments at the summit of the cell. The five arilli cohere so that, after dehiscence, the contents of the capsule fall as a globular mass.

97. CHENOPODIUM ALBUM, Linn.

98. CELOSIA FLORIBUNDA (sp. nov.): caule herbaceo (vel suffruticoso?) ramoso fere glabro; foliis coriaceis deltoideo-ovatis nunc subhastatis trilobisve basi in petiolum decurrentibus subtus tomentulosis puberulisve reticulatis; spicis subdensifloris paniculatis, paniculis in thyrsum amplum corymbiformem confertis; floribus plerumque digynis; sepalis albidis ovalibus obtusissimis ecarinatis obsolete 3–5-nerviis bracteas uninerves triplo superantibus; ovulis seminibusque 3–4; utriculo calycem adæquante. — Rami validi, striata. Folia cum petiolo 4–6-lin. longo 2–3-pollicaria, crassa, scabrida, mucronata, ovata seu ovato-lanceolata, nunc integra, nunc subtriloba vel subhasta, lobis rotundatis. Thyrsus maxime floribundus densus. Flores sessiles, vix sesquilineam longi, scarioso-albi, denique fuscescentes. Stamina ima basi monadelpha. Utriculus ovoideus, circumscissus. — This would appear to be allied to the Arabian and Abyssinian *C. populifolia.*

99. AMBLOGYNE (SARRATIA) FIMBRIATA. *Sarratia Berlandieri,* var. *fimbriata* (& var. *denticulata?*), Torr. in Bot. Mex. Bound. p. 179.

100. AMBLOGYNE (SARRATIA) TORREYI. *Sarratia Berlandieri* & var. *emarginata,* Torr. l. c., non Moq.*

---

* Moquin-Tandon's first thoughts, which were to combine his *Sarratia* and *Amblogyne*, seem to have been the best, and, in the next general revision of the order, when the subdivisions come to be grounded upon characters of more consequence than transverse dehiscence or the want of it, will probably be acted upon. *Amblogyne* will thus form a natural and pretty well defined genus, distinguished by the nature of the sepals of the female flowers, their union at the base, which hardens more or

101. FRŒLICHIA INTERRUPTA, Moq. in DC. Prodr. 13, 2, p. 421.

102. MOZINNA CANESCENS, Benth. Bot. Voy. Sulph. p. 52, t. 25.

103. CNIDOSCOLUS ANGUSTIDENS, Torr. Bot. Mex. Bound. p. 198.

104. RICINUS COMMUNIS, Linn. Cultivated?

105. APHORA SERRATA, Torr. in Bot. Mex. Bound. p. 197.

106. EUPHORBIA HINDSIANA, Benth. Bot. Voy. Sulph. p. 51, t. 24. Without flowers or fruit.

The following determinations and notes upon *Euphorbiæ* are communicated by Dr. Engelmann.

107. "EUPHORBIA LEUCOPHYLLA, Benth. Bot. Voy. Sulph. p. 50.

---

less, and the separation of the fructiferous calyx from its insertion with the achenium enclosed. The known species may be disposed as follows: —

AMBLOGYNE, Raf. (*Amblogyne* & *Sarratia*, Moq.)

§ 1. AMBLOGYNE VERA. Sepala fl. fœm. inferne modice connata, fructifera urceolata- seu infundibuliformi-conniventia apice patentia. Utriculus haud seu vix circumscisse dehiscens.

1. A. POLYGONOIDES, Raf. (*A. polygonoides* & *Sarratia Berlandieri*, Moq. in DC. Prodr. 13, p. 268, 270.) Sepala ♀ subspathulato-linearia, subæqualia, trinervata, nervis simplicibus. — Berlandier's specimens of no. 2276 [= 859], on which Moquin founded his *Sarratia Berlandieri*, are very poor, and perhaps did not really afford a circumscissile dehiscence. In these, and in much better specimens of the same species from Bexar (Berlandier's 2411 = 981) I find the utricle to open irregularly or vertically near the base; and the plant clearly belongs to *A. polygonoides*. — The *Amarantus polygonoides* of Wight's Icones Ind. Or., t. 512, is no more an *Amblogyne* than his t. 719. The former probably represents *Euxolus polygamus*.

2. A. URCEOLATA. (*Amaranthus urceolatus*, Benth. Bot. Voy. Sulph. p. 158. *Sarratia urceolata*, Moq. l. c.) Sepala ♀ inæqualia, infra laminam spathulato-orbiculatam [pinnato-] nervosam (nervis ramosis viridibus) 2 exteriora subangustata tricarinata, 3 interiora valde angustata unicarinata.— Bentham makes no mention of a circumscissile dehiscence in this species, nor indeed does Moquin.

Var. OBCORDATA: lamina sepalorum emarginata fere obcordata. *Amblogyne polygonoides*, Torr. in Bot. Mex. Bound. p. 170, quoad pl. coll. Wright, no. 1746. — This, I suppose, is a variety of *A. urceolata* (which I have not seen), with the characters of which it well accords, except that the lamina or dilated summit of the sepals is strongly notched (otherwise quite entire), and nearly obcordate in shape. The utricle is not circumscissile. The pinnately-veined or nervose dilated lamina, and the great contraction below of three of the sepals, at once distinguish this from *A. polygonoides*.

§ 2. SARRATIA. (*Sarratia*, Moq. pro parte.) Sepala fl. fœm. basi tantum connata, fructifera pl. m. patentia. Utriculus circumscisse dehiscens. — Caules erecti.

3. A. FIMBRIATA (*Sarratia Berlandieri*, var. *fimbriata*, Torr. l. c.): caule ramisque virgatis; foliis lineari-lanceolatis; glomerulis globosis in axillis foliorum sessilibus et superne in spicam subaphyllam congestis seu approximatis; bracteis calyce

These specimens, from the original locality of the species, perfectly agree with Bentham's description, but would be called rather grayish-hoary than snow white; the leaves are very deeply and almost pectinately dentate, supported by extremely short petioles; the appendages of the dark red or almost black glands are very unequal, as they commonly are in *Anisophyllum*, and in no species more so than in *E. adenoptera*, Bertol. (*E. dioica*, H. B. K.), the posterior ones being always the largest; in the specimens before me the posterior appendages are one line broad and half as long, the anterior ones scarcely more than half a line broad and somewhat shorter; they are always crenate or

---

brevioribus muticis; sepalis ♂ obtusis, ♀ basi connatis subæqualibus e basi angusta (uninervi seu in latioribus obsolete trinervi) in laminam flabellatam tenuiter scariosam radiato-nervosam ambitu fimbriato-incisam (fructif. patentissimam) maxime cuneato-dilatatis. — Valley of the Rio Grande near El Paso, and on the San Pedro, W. Texas, Wright, 582, pro parte. On the Gila River, Schott. Lower California, Xantus, supra, 99. — Nearly diœcious; the female plant only collected, among the flowers of which a male flower, with five narrowly-oblong and obtuse sepals, may rarely be detected. Female sepals more connate at the base than in any of the following.

4. A. Torreyi (*Sarratia Berlandieri*, cum var. *emarginata*, Torr. l. c., non Moq.): dioica; foliis ovato-oblongis seu oblongo-lanceolatis; glomerulis paniculato-spicatis et axillaribus; bracteis sepalisque masculis cuspidato-acuminatis; sepalis ♀ ima basi coalitis subæqualibus obovato-spathulatis uninerviis, nervo simplici seu leviter pinnatim ramoso, apice rotundato integerrimo retuso vel emarginato. — On the Mexican border from the Rio Grande (Dr. Bigelow, Dr. Parry, &c.) to Lower California, Xantus, supra, no. 100. A variety with linear or oblong-linear leaves and virgate spikes was collected near the sources of the Nebraska, by Mr. Henry Engelmann. — I have not seen Dr. Torrey's *S. Berlandieri* var. *denticulata*, with narrow leaves and erose-denticulate sepals, gathered by Thurber at Santa Cruz, Sonora, which seems to connect the present species with *A. fimbriata.*

5. A. scariosa (*Amarantus scariosus*, Benth. l. c. t. 51, *Sarratia scariosa*, Moq. l. c.), from Western Tropical America, I have not seen. From the figure and description it is apparently most nearly related to the foregoing species, but is a much coarser plant, with the "habit and inflorescence of *Amarantus retroflexus*," aristate bracts surpassing the flowers, deeply emarginate sepals to the female flowers and obtuse ones to the male flowers, which is far from the case in *A. Torreyi* if the male specimens in the Lower Californian collection really belong to that species.

6. A. squarrulosa (*Scleropus squarrulosus*, Anderss. ined., from the Galapagos) is another species with the broadly ovate or rhomboid-obovate lamina of the female sepals all abruptly contracted into narrow claws.

The genus *Scleropus* was evidently founded upon an abnormal character, a thickening of the peduncle and pedicels which occurs in various *Amarantaceæ*. Schrader's *S. crassipes* is an *Euxolus*. A part of no. 582 of Wright's Texano-New Mexieven deeply incised, the posterior more so than the anterior ones.* Ovary and capsule together with the styles hairy, but the stipe glabrous: styles longer than ovary, distinct, about two thirds divided: stigmas scarcely clavellate. Seed oval, sharp angled, slightly undulate, nearly 0.5 line long.

108. "EUPHORBIA SETILOBA, Engelm. in Bot. Williamson, Pacif. R. R. Rep. 5, p. 364. Identical with the plant from the lower Colorado, described in the report above cited. Root thick, but evidently annual; many stems from a few inches to a span long, almost verticillate from the very base, an arrangement which is very striking in the Californian *E. polycarpa* and the European *E. Chamæsyce*, but not so distinct in most other *Anisophylla*. Lower leaves coarsely serrate; upper ones entire; in the Colorado plant all nearly entire. Involucra minute, scarcely a third of a line long; the glands perpendicular, not horizontal, dark red, with conspicuous white laciniate appendages. Male flowers 5 – 8; in the original specimens scarcely ever more than 3. Ovary and capsule covered with short pubescence (not hispid); styles nearly ¼ line long, very slender, their branches remarkably club-shaped; seeds scarcely 0.4 lines long, sharp angled, acute, transversely rugose. — Distinguished from the closely allied *E. polycarpa* by the slit in the posterior part of the involucrum, the shape of the appendages, and the more acute and much more rugose seeds. — *E. setiloba* has also been collected by Dr. Newberry in the sandy deserts west of the lower Colorado river.

109. "EUPHORBIA POLYCARPA, Benth. Bot. Voy. Sulph. p. 50. No doubt identical with the original form, collected in the same neighborhood, but with rather larger leaves than Bentham describes. The specimens referred here by me in Bot. Mex. Bound. p. 186, undoubtedly belong here, as also *E. ocellata*, Nutt. in Hb. Hook., from San Diego, Coulter's no. 1448 in Herb. A. Gray, and specimens collected by Dr. Newberry near Los Angeles and in the Mohave desert. Mr. Boissier, however, distinguished, and perhaps justly, Wright's no. 1854, from

---

can collection is *Amarantus Blitum*, var. *græcizans*, in this *Scleropus* condition. As specimens of the same species were mixed with no. 859 in Berlandier's reliquiæ, which number is the equivalent of his 2279, this may have been what Moquin took for *Scleropus crassipes* in De Candolle's herbarium (Prodr. l. c. p. 271), from that collection.

* These petaloid appendages vary, in different specimens, from almost entire or crenulate to laciniate-multifid. — A. G.

the San Pedro River in Arizona, under the name of *E. micromera*, in DC. Prod. ined., by the very small involucres (0.2 lines long), the entire absence of appendages on the small yellow, not purple, glands, and the extremely short styles with subglobose stigmas. The length of the styles in these *Euphorbiæ*, however, is not a very safe character, as this specimen from San Lucas, and some others from Arizona and the Colorado desert prove: they have suberect styles shorter than the ovary (only about $\frac{1}{6}$ line long), while most forms from the State of California have elongated styles with divaricate clavate branches, twice as long as the ovary. My remarks about the variability of the plant may be extended to the shape of the leaves, which are usually oval, oblong, or oblong-linear, and obtuse at the base, but in specimens collected by Dr. Newberry at Laguna I find them almost orbicular and deeply cordate at the base. The stipules are divided on the upper, and united on the lower side of the stem, lanceolate-subulate, mostly entire and ciliate, in the specimen from San Lucas, however, glabrous. Stem and leaves usually glabrous, sometimes with a few scattered hairs, or entirely pubescent. The pubescent forms have always very narrow appendages, and the pubescence extends even to the ovary and capsule. The seeds are 0.4 line long, sharp-angled, with the sides almost smooth, or usually more or less distinctly undulate.

110. "EUPHORBIA HYPERICIFOLIA, Linn., var. COMMUNIS, Engelm. in Bot. Mex. Bound. p. 188. *E. Preslii*, Gussone Fl. Sicul. 1, p. 531; Boiss. in DC. Prod. ined. — Boissier's weighty authority has not convinced me that the Linnæan *E. hypericifolia*, with smaller flower-heads, smaller capsules, and smaller and paler seeds, is distinct from our common northern var. *communis*. This latter has become naturalized in Italy, where it has been described under different names (*E. androsæmifolia*, Presl, *E. trinervis*, Bertol., and *E. Preslii*, Guss.); nor can I distinguish *E. lasiocarpa*, Klotzsch, from the West Indies and South America, by any character besides the pubescent capsules. Intermediate forms unite all these forms.

111. "EUPHORBIA GYMNOCLADA (sp. nov.): fruticosa? ramis basi lignescentibus teretibus gracilibus strictis glabratis; foliis rameis ternatis internodio elongato multoties brevioribus linearibus seu oblanceolato-linearibus integris carnosulis (siccitate conduplicatis) subtus puberulis supra subnudis in petiolum brevissimum attenuatis; cymæ terminalis umbelliformis puberulæ radiis ternis iteratim dichotomis; pedicellis bracteas anguste lineares et involucra magna æquantibus; involucri

hemisphærici extus intusque minute puberuli dentibus orbiculato-ovatis fimbriatis dentatisve, glandulis 5 transversis bilabiato-cyathiformibus appendice iis duplo latiore (alba seu rosea) orbiculata integra suffultis; bracteolis paucissimis linearibus fimbriatis; florum masculorum numerosissimorum stipitibus demum exsertis; flore fœmineo breviter stipitato erecto glaberrimo; stylis distinctis ⅖ bifidis ovario æquilongis; ramis clavatis divaricatis; capsulæ coccis globosis; seminibus ovatis obscuris depresso-tuberculatis ecarunculatis. — Base of stem unknown, probably fruticose; the slender branches below ligneous; internodes 2–3 inches long. Leaves very deciduous, on the branches in threes, 4–7 lines long [the larger almost an inch long], and 1–1½ lines wide, on a petiole less than a line long. Cyme 1–1½ inches in diameter. Involucres with the large appendages 4 or 5 lines wide. Bracteoles very few (probably 5) outside of the 20 or 30 male flowers. Styles scarcely half a line long. Capsule 2½ lines in diameter; cocci with a slight groove on the back: seeds about 1½ lines long, blackish-brown, covered with flattened tubercles. — Distinguished from the closely allied Mexican *E. peganoides*, Boiss. Cent. Euph. p. 21, by the small size of the bracts, the pubescence of the involucre, the shape of the glands, the large and entire appendages, and the short stipe of the ovary. The seeds of *E. peganoides* are unknown."*

---

* Notes to the *Euphorbiæ* of the Botany of the Mexican Boundary Survey, by the author, Dr. Engelmann.

Page 185. *E. petaloidea*, γ. *Nuttallii* is distinguished by Mr. Boissier (Cent. Euph. p. 10) under the name of *E. zygophylloides*, no doubt correctly. Another of Mr. Boissier's new species, *E. polyclada*, from Texas, sent by Wright and Lindheimer, seems to be only a smaller flowered form of *E. petaloidea* with narrower appendages and smaller seeds.

P. 186. *E. cinerascens*, β. *appendiculata* must give way to the earlier name of *E. melanadenia*, Torrey in Bot. Whipp. p. 135. — *E. cinerascens* will have to be named *E. melanadenia*, β. *subinappendiculata.*

P. 187. *E. inæquilatera*, Sonder. A careful examination of the original specimen of *E. serpyllifolia*, Pers. Syn. 2, p. 14, preserved in Herb. De Candolle (a fragment of which has been kindly communicated to me), proves that this is the type of the American forms, referred by me to *E. inæquilatera;* they will therefore have to bear Persoon's name. Mr. Boissier, discriminating perhaps too nicely, considers the Asiatic and African forms as distinct, and comprises them under the name of *E. sanguinea*, Hochst., to which *E. inæquilatera* and many other synonymes are referred.

The following two new species, of the section *Tithymalus*, were collected by Dr. Newberry in the recent expedition under Lieutenant Ives: —

112. Folia pinnata Palmæ cujusdam.

113. COMMELYNA VIRGINICA, Linn.

114. ANTHEPHORA ELEGANS, Schreb. Gram. 2, t. 44.

115. CENCHRUS TRIBULOIDES, Linn., var. *C. pauciflorus*, Benth. Bot. Voy. Sulph. p. 56. *C. echinatus*, Benth. Pl. Hartw. no. 246. Apparently not distinct from the common plant of the eastern side of North America.

116. MUHLENBERGIA CALAMAGROSTOIDES, H. B. K., ex Benth. Pl. Hartw. p. 347. *M. longiseta*, Benth. l. c. p. 28.

117. BOUTELOUA POLYSTACHYA, Thurber. *Chondrosium polystachyum*, Benth. Bot. Voy. Sulph. p. 56. *C. subscorpioides*, C. Müll. in Bot. Zeit. 1856, p. 347. To this belongs no. 754 and 2021 of Wright's Texano-New-Mexican collection, and 792 of Coulter's Californian collection.

118. DACTYLOCTENIUM ÆGYPTIACUM, Willd.

119. Gram. nov. of uncertain genus, the single specimen mislaid.

120. VILFA VIRGINICA, P. de Beauv. Only sterile plants.

121. BRIZOPYRUM SPICATUM, Hook. & Arn. Bot. Beech. Voy. p. 403; Munro in Benth. Pl. Hartw. p. 342. Female specimens with the spikelets an inch and a half long, quite unlike any *Uniola spicata*, Linn., met with on the eastern coast of the United States.

EUPHORBIA SCHIZOLOBA (Engelm. in Lieut. Ives's Rep.): perennis, erecta, glaberrima, glaucescens; foliis breve ovatis integris breviter cuspidatis in petiolum brevem attenuatis; umbellæ trifidæ bracteis inferioribus rhombeis, superioribus transversis cuspidatis; involucri glandulis stipitatis crenatis incisisve nec cornutis, lobis glandulosis emarginatis; stylis ovario longioribus basi connatis. — East of the Lower Colorado, lat. 35°, alt. 2000 feet. Dr. J. S. Newberry, in Lieutenant Ives's Exped., March 26, in flower. — Amply distinguished from *E. montana* and other allied species by the peculiar shape of the glands and lobes of the involucrum. Stems 8 - 12 inches high. Leaves 5 - 7 lines long and 3 - 4 lines wide. Fruit and seeds unknown.

EUPHORBIA LURIDA (Engelm. l. c.): perennis, multicaulis, glaberrima, junior tota lurida; foliis oblanceolatis integris basi angustatis subsessilibus patulis; umbellæ 5-fidæ bracteis cuspidatis, inferioribus obovatis, superioribus suborbiculatis; involucri glandulis transversis crenatis, lobis ovatis membranaceis; stylis ovario multo brevioribus vix basi connatis. — Base of the San Francisco Mountains, lat. 35°, alt. about 7000 feet; in flower at the end of April. Dr. J. S. Newberry. — From the nearly allied *E. esulæformis* it is distinguished by the absence of horns on the glands, &c. Stems of the very young specimens six inches high. Leaves 5 to 8 lines long and 1½ to 2 lines wide. Fruit and seeds unknown.

4. *A Cursory Examination of a Collection of Dried Plants made by* L. C. ERVENDBERG *around Wartenberg, near Tantoyuca, in the Ancient Province Huasteca, Mexico, in* 1858 *and* 1859. By ASA GRAY.

This collection, being made by a person of limited botanical knowledge, contains a number of plants which are common weeds in most warm regions, but also a fair number of new or little known species, — enough to show that this district of country, in which Mr. Ervendberg resides, would well reward a proper botanical exploration, which it is the object of this notice to encourage him to undertake. This Mr. Ervendberg is fully disposed to do, if the possessors of herbaria could be sufficiently interested in this regard, by subscribing for his collections at the usual rates, to defray the necessary expenses. Supplied with proper appliances and facilities, Mr. Ervendberg would make a good, as he is a zealous, collector. The numbers (in parentheses) are those affixed by the collector and under which the specimens have been distributed.

The enumeration, beginning with the *Polypetalæ*, follows something like the Candollean order.

Clematis sericea, H. B. K., a glabrate form (214); *Argemone Mexicana*, L. (292); *Bocconia frutescens*, L. (202); *Cardamine hirsuta*, L. (188); *Cleome polygama*, L. (149); and a single specimen of some other species (136); male specimens only of what seems likely to be a new species of *Mayna* (273); *Prockia Crucis*, L., and fine and abundant specimens of the following: —

Banara Mexicana (sp. nov.): foliis glabris oblongis seu ellipticis breviter obtuse acuminatis a basi biglandulosa 5-costatis; panicula laxa, ramis elongatis pedicellisque velutino-puberulis; perianthio canescente. — "A tree in woods; flowers April to May, white," rather large; the sepals, or outer divisions of the softly canescent perianth, from 2½ to 3 lines long, strictly valvate in æstivation. Mr. Bentham, who has just revised this genus, informs me that he has another Mexican species, *B. dioica*, from near Vera Cruz, but that belongs to another group (121, 247).

Casearia hirsuta, Sev.? (328) and *C. nitida*, Jacq. (338). *Ionidium longifolium*, Moç. & Sesse, but with much shorter peduncles than that species is described (210).

Polygala paniculata, L. (187); and a *Securidaca*, without fruit, appears to be the *S. volubilis*, L. (119); there is also just the northern *Hypericum Canadense*, L. (218).

A broad-leaved *Stellaria* (194) is perhaps a variety of the South American *S. cuspidata; Drymaria cordata*, Willd. (228) could not fail to be in the collection; but a less familiar plant accords with *Glinus Cambessedii* of Fenzl, and no less with *G. parviflorus* of Wallich (271).

The Malvaceæ of the collection are some common species of *Sida*, viz. *S. urens*, L. (297), *paniculata* (203), *carpinifolia* (220), *rhombifolia* (296), and *Elliottii*, Torr. & Gray (176); *Malvaviscus arboreus*, Cav. (289); *Malvastrum tricuspidatum*, Gray (290, 291); *Anoda hastata*, Cav. (331); *Abutilon* (*Wissadula*) *periplocifolium*, Don (151), a form with narrow and tapering leaves, and slightly and bluntly pointed carpels; the "corolla flesh-color" according to the collector's memorandum; also *A.* (*Wissadula*) *mucronulatum* (152), that is, *Wissadula mucronulata*, Gray, Rel. Berland., mscr., & Torr. in Bot. Mex. Bound. p. 39, the flowers of which are said to be "golden yellow." It is no. 3109 of Berlandier's collection, also from Tantoyuca. But if *W. hirsuta*, *rostrata*, and other plants recently referred by Grisebach to *A. periplocifolium* really belong to one species, it may well include the present plant also, which is, perhaps, *Sida hernandioides* L'Her. There is, finally, a true *Abutilon* (161), the species undetermined for the want of fruit, and the following: —

Abutilon notolophium (sp. nov.): fruticosum; foliis lato-cordatis acuminatis integerrimis supra puberulis subtus ramis calycibusque furfuraceo-tomentulosis sæpius ferrugineis; pedunculis axillaribus folium subæquantibus et corymbosis ad apicem ramorum; floribus magnis; calyce quinquangulato; capsula (immatura hirsuta) polycocca, coccis compressis truncatis muticis dorso toto alatis 4 – 5-spermis demum bivalvibus, ala bipartibili chartacea margine muricato-denticulata, dentibus fasciculo pilorum terminatis. — Hills at Tantoyuca, Mexico, Jan. 1831 ("flores lutei"), coll. Berlandier 743, 2163. — Leaves 3 to 6 inches in diameter. Peduncles 2 to 3 inches long, one-flowered. Calyx an inch long, apparently strongly 5-angled, or as if crested at the base, 5-cleft. Petals an inch and a half long, broadly obovate, veiny. Carpels more than 20, forming a depressed-globular umbilicate fruit of an inch in diameter, separable at maturity, glabrous except on the back; the proper cell small (about 2 lines broad and 3 lines long), and lunate, chartaceous, but the whole produced into a dilated crest or wing, of 3 lines or more in width, which splits into two in dehiscence. Seeds superposed in a single series, puberulent.

Of Bombaceæ, Byttneriaceæ, Tiliaceæ, &c., there is *Eriodendron anfractuosum*, DC. (361); and specimens with male flowers of a tree apparently allied to *Myrodia* (373); *Melochia pyramidata*, L. (269); the ever-recurring *Waltheria Americana*, L. (356); *Guazuma tomentosa*, Kth. (131); *Triumfetta semitriloba*, L. (145); a form of *Heliocarpus Americana*, L. (225); and *Corchorus pilolobus*, Link (the *C. siliquosus* of Torrey and Gray's Flora, &c.), mixed with *C. siliquosus*, L. and *C. villosissimus*, St. Hil. (196, 197).

Amoreuxia Wrightii, Gray, Pl. Wright, 2, p. 26 occurs in a single specimen (124).

Oxalis corniculata, L. (347) could hardly fail to be present.

Vitis Caribæa, DC. (120, 376), *Gouania Domingensis*, L. (279), and a dubious, perhaps unpublished *Euonymus* (139), are solitary representatives of their respective orders.

The Malpighiaceæ are represented by *Galphimia glauca*, Cav. (130, 233), *Malpighia glabra*, L. (183), a *Stigmaphyllon* allied to *S. puberum* (323), and a variety or near relation of *Heteropteris cotinifolia*, Juss. (209).*

Spondias lutea, L. (353), *Bursera gummifera*, Jacq. (344), and *Icica Copal*, Rich. (185) represent the Terebinthaceæ; and *Rourea glabra*, H. B. K. (171), the Connaraceæ.

The Leguminosæ are *Crotalaria sagittalis*, L. (30), *C. incana*, L. (33, 295), *C. anagyroides*, H. B. K. (26); and *C. striata*, DC. (22); *Indigofera subulata*, Vahl (20, 27); *Eysenhardtia amorphoides*, H. B. K. (15, 230); *Dalea nigra*, Mart. & Gal., which is Bentham's *D. lasiostachya* and *D. elegans* of Seemann (7), and the following apparently undescribed species, which abounds in Berlandier's collection: —

---

* I append characters of a Mexican Maple, specimens of which were distributed among Berlandier's *reliquiæ*. It is the only Mexican species known to me, and belongs to the same group with *A. saccharinum*.

Acer Mexicanum (sp. nov.): glabratum; foliis subtus pallidis dilatato-cuneatis alte trilobis basi truncatis vel subquinquelobis basi magis rotundatis, lobis parce repando-sinuatis margine integerrimis; floribus umbellato-corymbosis simul cum foliis evolutis polygamis; pedicellis filiformibus barbatis; calyce campanulato subdentato (petalis nullis ?); staminibus 8; fructibus mox glabris, alis parvulis semi-obovatis basi angustatis arrectis. — "Nuevo Leon, in ruderatis, Junio, 1843," Berlandier, coll. no. 3122. Leaves 2 inches in diameter. Wings of the fruit 8 or 9 lines long, but probably not full grown.

Dalea thyrsiflora (sp. nov.) : fruticosa, cinereo-pubescens; caulibus erectis paniculato-ramosis ; foliolis 3 – 5-jugis (seu fol. supr. 1 – 2-jugis) ovalibus membranaceis subtus ramulisque grosse nigricanti-glandulosis; spicis axillaribus et terminalibus breviter pedunculatis thyrsoideo-paniculatis confertis brevibus (nunc inferne sublaxifloris) ; calyce cum bractea oblongo-ovata acuminata tubo æquilonga grosse glanduloso, dentibus subulato-setaceis villosis demum patentissimis apice uncatis tubo sublongioribus. — Monterey and San Fernando in the northern part of Mexico, and farther south from Victoria to Tula, coll. Berlandier, no. 763, 846, 1386, 2183, 2266. — Shrub 10 feet high, according to Ervendberg ; the branches herbaceous. Leaves pale and dull. Leaflets 3 to 6 lines long, obtuse at both ends, copiously dotted underneath with dark glands. Spikes very numerous, on short and slender, often branching peduncles, forming a leafy crowded panicle, the flowers often scattered on the lower part of the rhachis, or a few glomerate in the axils of the uppermost and reduced leaves. Flower about 3 lines long ; corolla apparently flesh-color or ochroleucous, scarcely exceeding the lower tooth of the calyx. Legume villous.*

Also *Tephrosia cinerea*, Pers. (19) and *T. Schiedeana*, Schlecht. (307), but with axillary racemes and more acute calyx-teeth.

Diphysa Carthaginensis, Jacq. ? (23) : the pedicels are long, and the leaflets are emarginate, as in Seemann's specimens from Panama;

---

* The other Daleas of Berlandier's collection are : —

Dalea frutescens, Gray (1887) ; *D. tuberculata*, Lag. (783, 1238, 2203), agreeing with Lagasca's character "foliis canescentibus" better than with De Candolle's ; *D. pulchella*, Moric. (782, 1337, 2202) ; *D. leucostoma*, Schlecht. ? but more pubescent, and with fuscous spikes, perhaps Lagasca's *D. virgata*, which is imperfectly characterized (837, 2257 and 761, 2181) ; *D. triphylla*, Pav. (1214) ; *D. laxiflora*, Pursh, which is mainly Moricand's *D. penicillata* (1747) ; *D. pogonathera*, Gray (613, 2023) ; *D. lasiathera*, Gray (1014, 2444) ; *D. nana*, Torr. (2053) ; *D. aurea*, Nutt. (953, 2383, and a very silky variety, 1016, 2446); and the following, which I am unwillingly obliged to describe as new : —

Dalea Berlandieri (sp. nov.) : fruticosa, erecta, glaberrima, ramosissima; ramulis gracilibus vix glandulosis; foliolis 2 – 3-jugis parvis obovato-oblongis cuneatisve retusis subcrassis glaucescentibus subtus rhachique grosse glandulosis ; spicis villosis laxifloris ; bracteis carnosulis ovato-lanceolatis sensim acuminatis carinatis ciliatis calyce brevioribus deciduis ; dentibus calycis e basi lata aristatis villosissimis infra medium denticulis 2 setaceis plerumque instructis tubo campanulato pubescente grosse glanduloso subduplo longioribus ; petalis rubescentibus. — In the mountains near San Carlos, Tamaulipas, Berlandier coll. 942, 2372. — Petiole and rhachis 2 – 5, leaflets 1 – 3, lines long. Calyx teeth in fruit 3 lines long.

but the latter are from 13 to 19 in number. And the pedicels of Coulter's plant, *D. sennoides*, Benth., are sometimes nearly twice the length of the calyx.

Harpalyce arborescens (sp. nov.): foliolis ovali-ellipticis utrinque rotundatis vel retusis glabratis subtus resinoso-atomiferis; labiis calycis obtusis (18). — The same species, but with adult leaves, which are more coriaceous, I have from Coulter's Mexican collection, ticketed *Harpalyce formosa.* If Mr. Bentham had possessed this when he wrote his little paper on *Harpalyce* in the third volume of Hooker's Journal of Botany, probably he would have distinguished it from the original species, still known only by Moçino and Sesse's drawing. The tapering of the leaflets to the base might indeed have been charged to the rudeness of the drawing, but the drawing plainly represents an herb, while Coulter's and the present specimens are ligneous. Ervendberg's memorandum states that his were taken from "a small tree, growing on high and dry land." The specimens are poor, with very few flowers; these accord throughout with the genus, except that the obovate vexillum bears a pair of small and rather obscure inflexed auricles. The ten stamens are monadelphous, with the tube cleft to the base: the anthers are linear and basifixed.

Zornia diphylla, Pers., var. *reticulata*, Griseb. (12); *Stylosanthes gracilis*, H. B. K.? (11); *Æschynomene Americana*, L. (16); *Desmodium triflorum*, DC. (32, 34), *D. barbatum*, Benth. (31), *D. incanum* or *adscendens*, DC. (43), and two undetermined species (29 and 299).

Piscidia Erythrina, L. (9); some Dalbergieous tree, but the specimens imperfect (28).

Centrosema Virginianum, Benth. (39) and *C. Plumieri*, Benth. (36, 362); *Phaseolus Truxillensis*, H. B. K. (41); *Stenolobium cæruleum*, Benth. (38), and some apparently common *Galactia* (40); *Rhynchosia Caribæa*, DC., with some *R. minima* (35), and *R. reticulata*, DC. (37, 42, 311).

Cassia hirsuta, L. (21), *C. obtusifolia*, L. (24), *C. Humboldtiana*, DC. (25), and *C. patellaria*, DC. (14).

Guilandina glabra, Mill. (229); *Casparea latifolia*, the *Bauhinia latifolia*, Cav. Ic. t. 405, the same as Berlandier's no. 2189.

Neptunia lutea, Benth. (3); *Prosopis* (*Algarobia*) *dulcis*, H. B. K., the same as Hartweg's no. 70 (319); *Mimosa floribunda*, H. B. K. (1), and

Mimosa Ervendbergii (sp. nov.): M. rubicauli simillima, sed villoso-pubescens, aculeis minoribus magis retrorsis armata, setæ interpinnas manifestæ, foliola paullo majora mucrone cuspidata, calyx corolla usque ad medium quadrifida dimidio tantum brevior, lobis hispidulis. Fructus ignotus (2). This is said to be "a shrubby plant, six feet high, growing in the savannas near Wartenberg"; therefore doubtless indigenous. But its resemblance to the Indian *M. rubicaulis* is striking. In the absence of fruit the points above mentioned are all that are observed. The adult leaflets are 4 or 4½ lines in length.

Calliandra Houstoni, Benth. (5) and *C. tetragona*, Benth. (8); *Leucæna pulverulenta*, Benth. (6), mixed with some specimens of *Acacia villosa*, Willd., and *A. glabrata*, Schlecht. Perhaps Lagasca's prior name of *A. penicillifera* belongs to and should be revived for this species (including *A. cuspidata*, Schlecht., *A. hirta*, Nutt., and *A. Texensis*, Torr. & Gray). The unapt name of *A. cuspidata* has been given by Cunningham to a received phyllodineous species. *Acacia spadicigera*, Schlecht. (343) was collected with male flowers only, in a cylindrical-oblong spike, the stamens monadelphous. To this species, rather than to *A. sphærocephala* (if the two are really distinct), should be referred Berlandier's no. 2145, gathered between Tampico and Tula, with mature fruit only. The pod is similar to that of *A. Farnesiana*, only even more thickened, oblong or ovoid-oblong, straight and pointed, 1½ to 2 inches long, the oval and turgid seeds imbedded in pulp.*

Pithecolobium lanceolatum, Benth. in Hook. Lond. Jour. Bot. 3, p. 198 (17); *Inga leptoloba*, Schlecht.? in flower only (4), and *I. eriocarpa*, Benth., perhaps also *I. Xalapensis* (10).

The only Rosaceous plant is a *Rubus*, said to climb 50 feet high, with the main stem an inch thick. It does not well agree with any species in the late Dr. Liebmann's revision of Mexican and Central American Rubi; perhaps it is a form of *R. fagifolius*, Schlecht., with the leaves silky-pubescent underneath.

There are two species of *Eugenia* (193 and 312), the former agreeing with no. 133 of Coulter's collection, from Xalapa.

The Melastomaceæ are an *Arthostemma* (159), *Clidemia pauciflora*, DC.? (138), and *Conostegia Xalapensis*, Don, with the flower-buds conspicuously acuminate (207).

Lythrum alatum, Pursh (300) resembles some of the northern varieties; *Œnothera tetraptera*, Cav. (201) and *Œ. rosea*, Ait. (367) are common Mexican plants.

---

* Berlandier's no. 3144 is *Lysiloma desmostachya*, Benth., in fruit. The pods are remarkably large, being from 5 to 7 inches long, 1½ to 2 inches broad, the flat, chartaceous or coriaceo-membranaceous valves neatly falling away from the scarcely thickened persistent margin.

Mentzelia aspera, L. (206) is in all collections; *Gronovia scandens*, L. (149) is not so common, nor is *Turnera Pumilea*, L. (134).

Passiflora fœtida, L. (158^b), *P. serratifolia*, L. (226), and *P. difformis*, H. B. K. (211); *Lagenaria vulgaris*, Ser. (318); *Sicyos angulatus*, L. (306), an *Elaterium?* with only male flowers (258), and male flowers only of another Cucurbitacea (354).

There are four species of *Begonia* (261, 268, 334, 370), which will soon be determinable by the forthcoming (15th) volume of De Candolle's Prodromus.

Eryngium fœtidum, L. (260) and *Helosciadium leptophyllum*, DC. (190, 256, 257) are the commonest subtropical weeds.

Loranthus Schiedeanus, Cham. & Schlecht. is the only representative of that order.

The Rubiaceæ are a doubtful *Spermacoce* (181); *Diodia villosa*, DC. (255); *Richardsonia scabra*, St. Hil. (238) which, by the way, inclines to be naturalized in the United States, and is probably Pursh's *Spermacoce involucrata; Geophila reniformis*, Cham. & Schlecht. (232); the common *Chiococca racemosa*, Jacq. (241); *Psychotria mollis*, Poir.? (246); *Randia Xalapensis*, Mart. & Gal.? (320); flowers of another *Randia* mismatched with leafy branches of a *Casearia* (329); *Bouvardia ternifolia*, Schlecht. (105); *Oldenlandia* (*Gerontogea*, Cham. & Schlecht.) *microtheca*, DC. (200), and fine specimens of the following apparently new species: —

Exostema Mexicanum (sp. nov.): foliis ovalibus acuminatis basi rotundatis vel obtusis breviter petiolatis membranaceis insigniter pinninerviis ramisque glabris; cyma corymbosa composita floribunda floribusque cinereo-puberulis; pedicellis ovario clavato longioribus; calycis limbo brevi quinquefido; corollæ (albæ?) lobis tubo æquilongis. — Arbor elata, foliis pallidis semipedalibus, corollis pollicaribus, æstivatione generis, i. e. quincuncialiter imbricatis, nec valvatis,* antheris anguste linearibus basifixis. Filamenta epigyna, a corollæ libera (125).

---

* Weddell, in his tabular synopsis of the *Eucinchoneæ* assigns an æstivation of the valvate type to *Exostema;* but it is not so in the genuine Caribæan species, nor in the present one, which is a manifest congener of *E. Peruvianum.* I know not Bentham's *E. occidentale*, in which the æstivation of the corolla is said to be valvate. The wonder is that the manifestly imbricative æstivation in *Exostema* could have

Mitreola petiolata, Torr. & Gray occurred in the collection without a number. *Valeriana scandens*, L. (357) is one of the commonest of Tropical American plants.

The Compositæ of course are numerous. We have *Vernonia Deppeana*, Less. (46), *V. Schiedeana*, Less., ex Schultz Bip. (51), *V. strigosa*, Schultz Bip. in coll. Linden, mixed with *V. canescens*, H. B. K. (47), and *V. liatroides*, DC., which is 229 of Coulter's collection (70): also *Elephantopus tomentosus*, L. (79, 335); *Elephantosis angustifolia*, DC. (60); *Distreptus spicatus*, Cass. (237); and *Lagascea latifolia*, DC. (317).

Pectis Seemanni, Schultz Bip. in Bot. Voy. Herald, p. 309 (137).

Pectis latisquama, Schultz Bip. in coll. Mex. Schaffn., var. *Berlandieri:* caule pedunculisque elongatis; foliis interdum pinnatifido-dentatis; involucri squamis minus latis spathulato-obovatis. — Pappus in the ray commonly multisetose like that of the disk, but sometimes scanty. This is no. 3159 of Berlandier's collection, from Nueva Leon (63).

Cœlestina ageratoides, var. *latifolia*, DC., apparently *C. corymbosa*, DC. also (100).

Isocarpha oppositifolia, R. Br., the *Dunantia Achyranthes* of De Candolle (72).

Stevia paniculata, Lag., DC., which is the *S. rhombifolia* and *S. origanoides*, H. B. K., and *S. nepetæfolia*, DC. (Berlandier's no. 2273), not of H. B. K. (50).

Brickellia Cavanillesii, Benth., the same as no. 1247 of Berlandier's collection (310).

Eupatorium divergens, Less., which is probably no more than a variety of *E. conyzoides* (54); *E. graciliflorum*, DC., from the character, but the heads are 15-flowered (44); *E. ivæfolium*, L. var. *β*. DC., with the tips to the scales of the involucre green and decidedly squarrose-spreading; the same as no. 1948 of Fendler's Venezuelan collection (53); *E. collinum*, DC. (52); *E. quadrangulare*, DC., with the flowers more developed than in Berlandier's collection from the same district (340); *E. pycnocephalum*, Less. (*E. Schiedeanum*, Schrad. &c.) according to Dr. Schultz (57); *E. Berlandieri*, DC. (56); and *Critonia daleoides*, DC., or *Eupatorium sessile*, Schultz Bip. (88, 341).

---

been overlooked. This rectification of the character leaves my genus *Badusa* to be distinguished almost alone by the dorsifixed and at length versatile anthers, which will hardly be deemed sufficient.

Mikania suaveolens, H. B. K., which is *M. gonoclada*, DC. (82) ; *M. Houstonis*, Willd., or a plant well agreeing with the character of that species, and with the points mentioned by Bentham in Plantæ Hartwegianæ; but Ervendberg notes it as an erect plant, and the branches are herbaceous (87, 222).

Aster (*Oxytripolium*, Nutt.) *divaricatus*, Torr. & Gray (81) ; *Erigeron scaposum*, DC. (60) ; *E.* (*Cænotus*) *linifolium*, Willd. (93) ; and a species not unlike *E.* (*Polyactidium*, DC.) *delphinifolium*, but with entire leaves (69).

Solidago Canadensis, L., var. *procera*, Torr. & Gray (62) ; *Heterotheca Chrysopsidis*, DC. (71).

Baccharis cærulescens, DC., a narrow-leaved variety, which is also *B. Alamani*, DC. (48) ; *B. rhexioides*, H. B. K. (44).

Pluchea subdecurrens, DC.? var. *canescens ;* probably a variety of the plant of Xantus, no. 53, from Lower California (p. 160), referred to *P. subdecurrens ;* but the leaves are larger (3 inches long by half an inch or more in width), the stem more winged, and both clothed with a tender white woolliness, which, being easily detached, is probably deciduous (343) ; also the very common *P. odorata*, Cass. (50), *Pterocaulon virgatum*, DC. (59), and *Salmea scandens*, DC. (49, 316).

Polymnia maculata, Cav., which is apparently only a variety of *P. Uvedalia* (206) ; *Melampodium heterophyllum*, Lag. (80) ; *M. divaricatum*, DC. (86), and

Melampodium gracile, Less. var. *oblongifolium :* foliis oblongis seu lanceolatis nunc subintegerrimis (*M. oblongifolium*, DC.) nunc sinuato-lobatis vel panduratis (92). — This is from the same district as Berlandier's plant on which *M. oblongifolium* was founded, and is clearly of the same species; but the cauline leaves are mostly sinuate or panduriform, and, although they are not rhomboidal, the plant is pretty clearly a form of *M. gracile.*

Ambrosia artemisiæfolia, L., one of the commonest weeds (168, 180).

Melananthera hastata, Rich., a very small-leaved form, apparently *M. oxylepis*, DC. (77).

Gymnolomia ? patens (sp. nov.) : vix pubescens; caulibus herbaceis; ramis gracilibus patentissimis oligocephalis ; pedunculis filiformibus; foliis membranaceis ovatis vel subcordatis caudato-acuminatis argute serratis trinerviis, petioli gracili; involucri vix biserialis squamis lanceolato-subulatis disco brevioribus; paleis receptaculi submembrana-

ceis rectis complicatis corolla paullo brevioribus achenia compressa calva amplectentibus (95). — This is apparently a congener of Bentham's *Andrieuxia Quitensis* (an unfounded genus, as *A. Mexicana* is a *Heliopsis*) and of his *Gymnopsis? Costaricensis*, as well as of Steetz's *G. vulcanica*, although the broader and emarginate-truncate young achenia are much compressed, and not in the least tetragonal. There is no trace of a pappus. Not to multiply genera upon inconsiderable characters, these should probably all be referred to *Gymnolomia*, Kunth (*Gymnopsis*, DC., excl. *Aldama*). Heads in the present species 3½ lines long; rays 6 to 8, yellow, 4 or 5 lines long.

Aldama (*Gymnopsis*, DC.) *Schiedeana* (98); var. foliis elongato-lanceolatis (99); and *A. uniserialis*, Gray, Pl. Wright., no number.

Simsia lagascæformis, Benth. Pl. Hartw. p. 19, an DC.? (378).

Oyedæa ovalifolia (sp. nov.): scabrida; foliis ovalibus utrinque acutis obsolete denticulatis scabris; involucro disco dimidio breviori, squamis appressis inappendiculatis rotundatis. — Folia submembranacea, 4-pollicaria, triplinervia, rete venarum laxa; petiolo brevi. Capitula iis *O. verbesinoidis* dimidio minora (97). — This is a true *Oyedæa*, the species well marked by the short involucre, the rounded and obtuse scales of which altogether want the foliaceous tips. Rays, achenia, and pappus much as in *O. verbesinoides*, but smaller. The plant was found on the road between Wartenberg and Huaulta, and is said by the collector to "climb high up on trees": there may have been some mistake about this, through some transposition of memoranda.

Bidens tereticaulis, DC., forma foliolo terminali angustiore (67). — Lessing may have been right in referring this to *B. squarrosa* (which I have, as collected by Miss Alderson at Caracas, and which is also Fendler's no. 696), the principal difference being in the smaller size and greater number of the heads. The achenia are similar, and in both ciliate with strong divergent bristles down their whole length. For "apice ciliatis" De Candolle probably meant "versus apicem," but the ciliation extends to the base in Berlandier's as well as in the present specimens. There is, however, in *B. squarrosa* a crown of erect bristles fringing the apex of the achenium, between the awns, of which there is no trace in *B. tereticaulis*.

Verbesina persicæfolia, DC. (84, 91), in which, as in Berlandier's original specimens, the leaves are not "elongato-lineari-lanceolatis" (as indeed the dimensions assigned by De Candolle testify), but oblong-lanceolate or oblong, tapering to both ends.

Verbesina microptera, DC., only a variety of *V. Virginica*, L. (58).

Stemmodontia scaberrima, Cass. in Dict. Sci. Nat. 46, p. 407. *Buphthalmum scabrum*, Cav. *Wedelia hispida*, H. B. K. *Lipochæta Texana*, Torr. & Gray, Fl. N. Am. & Bot. Mex. Bound. p. 92. *Wirtgenia Texana*, Schultz Bip. in Bot. Voy. Herald, p. 304. A form with small heads (89). — Doubtless this is the plant upon which Cassini founded his genus *Stemmodontia*, in the description of which he even indicates the appendages on each side of the base of the achenium. So that *Wirtgenia* of Schultz must give place to *Stemmodontia*, Cass.

An undetermined, apparently new Composita, with the aspect and fertile ligules of *Verbesina*, but with a chaffy pappus (78). Also *Oligogyne Tampicana*, DC. (85).

Dysodia pubescens, Lag., a mere variety of *D. chrysanthemoides*, Lag. (379); *Tagetes lucida*, Cav. (94), and *T. peduncularis*, Lag. (377); and a variety of *Porophyllum ellipticum*, Cav. (75).

Calea urticæfolia, DC. (96); *Tridax procumbens*, L. (61); *Helenium microcephalum*, DC. (76); also a remarkable plant, which, not to multiply genera on single species, I am disposed to append to *Bahia*, viz.: —

Bahia? (Anisostemma: eligulata, anisopappa) *nepetæfolia* (sp. nov.): erecta, tomentella, corymboso-ramosa, foliis oppositis deltoideo-ovatis v. subcordatis grosse obtuseque dentatis incisive subtus albo-tomentosis, petiolo gracili; capitulis conferte corymbosis; involucri squamis ovali-lanceolatis; corollis albis; pappi paleis 3 ad latus exterius linearibus tubum corollæ adæquantibus, 3 – 4 ad latus interius perbrevibus. — Folia 1 – 2-pollicaria, petiolo ¼-pollicari. Pedicelli 4 – 12 lin. longi. Capitula 4 lin. longa, multiflora, homogama. Involucrum laxum, squamis circ. 12 utrinque angustatis dorso carinatis extus tomentulosis disco paullo brevioribus. Achenia gracilia, basi longe attenuata, hirsuta, corollis omnibus tubulosis 5-dentatis (ut videtur albis) longiora. Pappi paleæ fere enerves (65). — Technically this might well enough be taken as the type of a new genus; but if it had rays it would certainly be referred to *Bahia* proper, of which it has the habit and whole general structure. The white, or possibly flesh-colored flowers, with a glandular tube, &c., show an affinity to *Florestina;* — but the opposite leaves, and the capitellate tips of the branches of the style (which accord with *Bahia* § *Eriophyllum*) are quite different. The extraordinary reduction of the paleæ of the pappus on the side toward the centre of the receptacle is constant.

Gnaphalium polycephalum, Michx., is the only Gnaphalineous plant in the collection.

Erechthites hieracifolia, Raf., agreeing with *E. Miradorensis*, Schultz Bip. Pl. Lind. (360); *Neurolæna lobata*, R. Br. (66), and *Neurolæna* (*Schistocarpha*) *Lindenii*, Schultz Bip. in Pl. Lind. ined. (45, 272); *Gynoxys Berlandieri*, DC. (79), which according to Weddell's views would be referred to *Senecio*, notwithstanding the style; *Senecio lobatus*, Pers., which is not only *S. Mississippianus*, DC., but probably also *S. Tampicanus*, DC., not of Gray, Pl. Wright. (90).

Leria nutans, DC. (73) and *L. integrifolia*, Cass.? (74); also *Pinaropappus roseus*, Less. (64).

Lobelia Cliffortiana, Willd., both smooth and hairy forms, the capsule nearly all inferior (249, 308), and *L. cardinalis*, L., a variety with almost entire leaves (160).

Ardisia Pickeringia, Torr. & Gray in DC. Prodr. Said by Mr. Ervendberg to be common in all the woods and prairies. Accords very well with the plant of Key West. Corolla sometimes with a completely convolute æstivation, rarely quincuncial (216).

Jacquinia racemosa, A. DC.? a form with oblong-lanceolate leaves, 1½ to 3½ inches in length, the tube of the corolla not exceeding the calyx (245, 369).

Plumbago scandens, L. (213).

Plantago Virginica, L., a fertile form with the lobes of the corolla connivent over the fruit, *P. floccosa* of Decaisne being the same with the lobes of the corolla spreading (182).

The Bignoniaceæ are *Bignonia Andrieuxii*, DC.? (166); *Amphilophium molle*, Cham. & Schlecht., a mere variety of *A. paniculatum* (113); *Tecoma stans*, Juss. (103); *T. leucoxylon*, Mart. (also *Tabebuia rosea*, DC.?), said to be "a large tree with rose-red flowers, called Palo de Rosa" (329); an undetermined flowering plant of the order (195, 326); *Martynia diandra*, Glox (114).

The Acanthaceæ are a nearly stemless form of *Elytraria caulescens*, Ledeb. (173); *Blechum Brownei*, Juss. (294); *Dicliptera assurgens*, Juss. (264); *Rhytiglossa dasyclados*, Nees? (349); *Cryphiacanthus angustifolius*, Nees? (109, by error distributed as 104); and *Drejera Willdenowiana*, Nees, the lower lip of the corolla merely three-lobed at its summit (333).

The Verbenaceæ are *Callicarpa acuminata*, H. B. K. (212); *Lantana odorata*, L. (162 in part); a variety of *L. canescens*, Kunth (107);

and an undetermined *Lantana* said to climb 15 or 20 feet high and to have orange-yellow flowers (351); *Lippia dulcis*, Trev. (330); *L. stæchadifolia*, H. B. K. (162^a, 313); *L. callicarprefolia*, H. B. K. (278); *L. myriocephala*, Cham. & Schlecht. (288); *L. geminata*, H. B. K.* (162 in part); *Tamonea scabra*, Cham. & Schlecht. (110); *Priva echinata*, Juss. (148); *Bouchea Ehrenbergii*, Cham., a stout form (280), and a variety with laciniate-toothed leaves (102); *Stachytarpha dichotoma*, Vahl (150); *Petrea arborea*, H. B. K., but it is scandent, " ascending to the tops of the highest trees " (342); *Verbena Aubletia*, L. (236), and *V. Ehrenbergiana*, Schauer? (153).

The Labiatæ are *Ocimum micranthum*, Willd. (117, 252); *Hyptis capitata*, Jacq. (309); *H. suaveolens*, Poit. (108); *H. spicata*, Poit. (118); *H. spicigera*, Lam., to which belongs Anderson's *H. subverticillata*, from the Galapagos (116); *Micromeria Xalapensis*, Benth. (106); *Hedeoma Drummondi*, Benth. (141, 366), and *Scutellaria microphylla*, Moç. & Sesse? (242).

The Borraginaceæ are *Cordia ferruginea*, Rœm. & Schult. (170); *Heliotropium inundatum*, Sw. (165); *H. phyllostachyum*, Torr. Bot. Mex. Bound. p. 137, which is apparently *H. myosotoides* of Chapman's Flora S. U. S., and probably some old tropical species (129); *Heliophytum Indicum*, DC. (164) and *H. parviflorum*, DC. (163).

The Scrophulariaceæ are *Angelonia angustifolia*, Benth. (104); *Russelia sarmentosa*, Jacq. (223, 263), and *R. juncea*, Zucc. (115); *Stemodia parviflora*, Ait. (248); and *S. peduncularis*, Benth., which I suppose is also *S. Jorullensis*, H. B. K., and probably a variety of *S. trifoliolata*, with peduncles an inch or an inch and a half long (267); *Capraria biflora*, L. (184); *Pogostoma saxifragæfolia*, Schrad. (111); *Scoparia dulcis*, L. (253, 305); *Buchnera lithospermifolia*, H. B. K., too near *B. elongata* (117, 365); and *Lamourouxia cordata*, Cham. & Schlecht. (112).

The Solanaceæ are a single and poor specimen of *Solanum Jamesii*, Torr., perhaps *S. appendiculatum*, Dunal (175); Dunal's *S. torvum*, var. *ochraceo-ferrugineum* (285); *S. verbascifolium*, L. (301); a single specimen of *S. scabrum*, Vahl.; *S. volubile*, Sw.? (270); *S. quadriflorum*, Mart. & Gal.? (126); *S. nudum*, H. B. K.? (352); some common *Physalis* (215); *Cestrum dumetorum*, Schlecht. (322); *Datura Stramonium*, L. (293); and *Nicotiana plumbaginifolia*, Viv. (262).

---

* Dr. Torrey's *Lippia Berlandieri*, in Bot. Mex. Bound., as to the specimens of Wright, &c., is not the real one, but is *L. graveolens*.

The Polemoniaceæ, *Gilia incisa*, Benth., before known in Mexico as far south as Monterey (235, 250); *Lœselia coccinea*, Don (381).

The Hydroleaceæ, *Hydrolea spinosa*, L. (128); *Nama Jamaicensis*, L. (189); and *Wigandia macrophylla*, Cham. & Schlecht. (155), the latter apparently a good species. In De Candolle's Prodromus, for "foliis plusquam pollicaribus," we should read "foliis plusquam 15-pollicaribus."

The Convolvulaceæ are *Calonyction speciosum*, Chois. (350); *Jacquemontia hirsuta*, Chois. (157^b); and *Evolvulus linifolius*, L. (169).

The Gentianaceæ, *Eustoma exaltatum*, Griseb. (259, 315); and *Erythræa Chilensis*, Willd.? (186, 265), doubtless the Mexican plant of Hartweg's collection, but probably not the Chilian; the collector notes the flowers of 265 as golden-yellow.

The Apocynaceæ are *Rauwolfia heterophylla*, R. & S., var. *puberula* (374); the smooth variety of *Thevetia Yccotli*, DC., but with the veins of the leaves nearly inconspicuous (327); an *Echites?* in flower only (240), and another species, an *Amblyanthera* of Müller Argov., apparently a new species, in foliage, calyx, and very torose slender fruit very much resembling *E. tenuicaulis* of Spruce from the Amazon (a variety of *Amblyanthera versicolor*, Müll. Argov.), but the leaves are pubescent beneath, and with a deeper basal sinus, the corolla only half as long, its tube fusiform, the throat above the constriction not wider than the body below, a squamula under each lobe of the calyx (217); also

Prestonia Mexicana, A. DC. (127). In addition to the flowering specimens, we have in the collection a pair of follicles of this species, which help to complete the generic character. They are quite different from those of *Hæmadictyon*, as described by Müller in the Flora Brasiliensis, but more like those of *H.? Mexicana*, as described by De Candolle from Moçino and Sesse's figure. They may be thus characterized: Folliculi oblongo-conici, 3-pollicares, basi fere pollicem lati, prurienti-hirsutissimi, pericarpio crasso. Semina oblonga, sursum attenuata, apice comosa, testa fere suberosa.

The common *Asclepias Curassavica*, L. (132), represents its order, along with a plant which must be *Sarcostemma elegans*, Decaisne. But the leaves are rather broadly cordate or oblong-cordate, and tipped with a conspicuous cusp, the lobes of the corolla minutely puberulent within (174).

But the most interesting plant of the collection, and for which I am now enabled to complete the character, is the

Cytinus Americanus (R. Br.): dioica; floribus arcte sessilibus ebracteolatis, masculis e bractea paullo remotis; perianthio profunde 8–9-fido patentissimo, æstivatione contorto-imbricata; columna et stylo modice elongatis; cuspide connectivi antheris æquilonga; placentis 14–16 integris? (101). These specimens are very interesting, both as furnishing the female flowers and the habitat of this plant, both before unknown. They were collected by Mr. Ervendberg at Wartenberg, in wet places in the woods. The male plant from Mr. Barclay, which Mr. Brown examined, was in all probability also Mexican. As to the male flowers, the only thing of any importance to add to Mr. Brown's brief account is, that they are supra-axillary, being at a small distance above their subtending bracts. These bracts appear to be much more thick and coriaceous (as also is the perianth) than in *C. Hypocystis.* The flowers also are larger, and the perianth more deeply cleft. The latter when fully developed is half in inch long, and rotately campanulate; in æstivation only one lobe is exterior and one interior, the others overlapping one another in the convolute manner. The stamineal column becomes a line and half long, rather longer than the anthers. These are from 8 to 10 in number; their fleshy connective in some blossoms appear to be as much combined as in *C. Hypocystis,* while in others, probably older ones, they are less combined above, as Brown describes them, and radiate-spreading. The cusp terminating the connective is fleshy, and of the same nature as that of the other species, but is prolonged and subulate, usually as long as the anther itself. The female flowers collected are in an advanced state. The globose and very closely sessile gravid ovary is close to the subtending bract; the style between 1½ and 2 lines in length; the stigma radiate, but obscurely lobed. A cross-section of the gravid and enlarged ovary shows from 10 to 14 thin lamellar placentæ projecting far into the cell, and three to five smaller ones, only slightly projecting, all apparently simple (not lobed), and not approximate in pairs, covered with linear-oblong ovules; and moreover the parieties between the placentæ are ovuliferous as (apparently) Hooker figures them in *C. dioicus.* No one can examine the flowers without being struck (as were Linnæus, Jussieu, and Brown) with their affinity to Aristolochiaceæ.

The common *Boerhaavia erecta,* L. (156), and *Pisonia aculeata,* L.? the species uncertain for want of fruit (331), represent the Nyctagineæ; and *Coccoloba Humboldtii,* Meisn. (364) the Polygonaceæ.

The Phytolaccaceæ are *Rivina lævis,* var. *pubescens,* Griseb., the *R.*

humilis, L. (142, 302, 339), and the interesting *Agdestis clematidea*, Moç. & Sesse (146), of which Berlandier's no. 2367 is the female plant, in fruit. Concerning this genus, see Grisebach, Erlaut. Pl. Amer. Trop. p. 4.

Anredera scandens, Moq. (227), and the following Amarantaceæ (all common weeds, except the first), *Telanthera gracilis*, Moq. (287); *Alternanthera Achyrantha*, R. Br. (179); *Iresine celosioides*, L. (221); *Gomphrena globosa*, L. (140); *Cyathula achyranthoides*, Moq. (254); *Achyranthes aspera*, L. (359); *Chamissoa altissima*, H. B. K.; *Amarantus paniculatus*, L. (283).

The single Laurineous plant in the collection is an interesting and little-known one, viz. *Misanteca capitata*, Schlecht., with flowers and fruit. It well accords with the published description, except that the cupule of the fruit (which is said to be red, and is probably somewhat fleshy when fresh) is not sulcate, and its border is evenly truncate. The fruit itself seems to be a nut rather than a berry, as may also be inferred from the fact that the collector took the tree for an Oak. It is "a tall tree" (375).

The Euphorbiaceæ are *Acalypha alopecuroides*, Jacq. (304); an undetermined *Croton* (192), *C. Eleuteria*, L., or near it (199, 243), and the male of *C. trichocarpum*, Torr. Bot. Mex. Bound., p. 196 (167); *Dalechampia scandens*, L. (158[a]), and another species allied to *D. convolvuloides* (348), an *Euphorbia* near to or identical with *E. hexagona*, Nutt. (157[a]); *E. pilulifera*, L. (133); and *E. dioica*, H. B. K., which is *E. adenoptera*, Bertol., and, according to Dr. Engelmann, *E. anceps*, Benth., and *Anisophyllum densiflorum* of Klotzsch and Gärke, in their recent dissection of the natural Linnæan genus (251).

The Urticaceæ are *Pilea microphylla*, Liebm. (*P. muscosa*, Lindl., &c. 172); an undetermined *Ficus* (332); *Dorstenia Contrayerva*, L. (198), and *D. excentrica*, Moricand (123); the interesting *Castilloa elastica*, Cerv. (371); and a *Celtis* (nearly of the section *Mertensia*, H. B. K.) which appears to be new, but which I am unwilling now to describe as such (321).

There is a common *Callitriche* (143); an *Artanthe* (234); *Peperomia Berlandieri*, Miq. (358); a *Salix* (178); *Myrica Xalapensis*, H. B. K. (204); and a *Quercus*, the same as Berlandier's no. 2194 (346).

The Endogenæ of the collection are very few, consisting of the inflorescence of a "Palm, 30 or 40 feet high, with flabelliform leaves, used for covering roofs, and a sweet, edible fruit," apparently the same as Berlandier's 3207, probably *Sabal umbraculifera*, Mart. (314) ; two *Cannaceæ* (274, 282) ; *Bomarea hirtella*, Herb. (205) ; a *Tillandsia* (276) and a *Bromelia?* (372); *Pontederia sagittata*, Presl. (277); *Smilax mollis*, H. B. K. (325), *S. platycentra*, Schlecht.? but nearly unarmed (244, 336, 337), and another, perhaps the male of *S. glaucocarpa*, Schlecht. (363); a *Tradescantia* (275); *Eleocharis geniculata*, L. (208); *Panicum divaricatum*, L. (281) and *P. hirtellum*, L. (266).

The Ferns, separately numbered, are, *Polypodium incanum*, Sw. (8), *P. repens*, Sw. (16), *P. decumanum*, Willd. (15), and *P. lycopodioides*, L. (9); *Gymnogramme* (*Hemionitis*) *palmata*, L. (6) ; *Cheilanthes elongata*, Willd. (19) ; *Adiantum Chilense*, var. *hirsutum*, Hook. (11), and *A. tenerum*, Sw. (17) ; a variety of *Pteris aquilina*, L., nearly *P. caudata* (4), and *P. grandifolia*, L. (5) ; *Asplenium pumilum*, Sw. (10); *Phegopteris tetragona*, Mettenius (2, 13, 14); *Aspidium trifoliatum*, Sw. (1) ; *Anemia adiantifolia*, Sw. (3) ; and *Lygodium Mexicanum*, Presl. (7).

5. *Note on the Genus Graphephorum*, Desv., *and its Synonymy*. By Asa Gray.

This communication announced the discovery by Dr. Charles Pickering, in August last, at the Falls of the Riviere du Loup, in Lower Canada, of the "*Aira melicoides*" of Michaux, on which Desvaux and Beauvois founded the genus *Graphephorum;* also that the *Dupontia Cooleyi*, of the second edition of Gray's Manual of the Botany of the Northern United States, proves to be a large variety of the same species. Carrying out the view indicated in the Manual, Dr. Gray proposes to dispose the genus — so extended as to include *Dupontia*, R. Br., *Scolochloa* of Link, and *Arctophila* of Ruprecht — as follows : —

Genus GRAPHEPHORUM, Desv., Beauv.

Graphephorum, "Desv.," Beauv. Agrost. p. 76, t. 15, f. 8 (1812); "Desv. Jour. Bot. ann. 1813, p. 71"; Kunth, Enum. 1, p. 250, & Suppl. p. 193, t. 14, f. 9 (pistillum et squamulæ) = *G. melicoides*, Desv. (*Aira melicoides*, Michx.).

Dupontia, R. Br. App. Voy. Parry, p. 190 (1824) = *D. Fischeri*, R. Br.

Scolochloa, Link, Hort. Berol. Descr. 1, p. 136 (1827) = *S. festucacea*, Link (*Arundo festucacea*, Willd. *Festuca borealis*, Mert. & Koch. *F. arundinacea*, Lilijeb).

Dupontia et *Arctophila* (sub *Poa*), Rupr. Fl. Samoj. (in Beitr. Pflanz. Russ. Reiches, 2), p. 62, 64, t. 6 (1845) = Spp. plur.

Fluminia, Fries, Summ. Veg. Scand. 1, p. 247 (1845 s. 1846) = *F. arundinacea*, Fries, seu *Festuca borealis*, Mert. & Koch.

Scolochloa (Link), *Dupontia* (R. Br.), et *Colpodium* § *Arctophila* (*C. fulvum* et *C. pendulinum*), Griseb. in Ledeb. Fl. Ross. 4, pp. 385, 386, 393 (1853).

§ 1. Paleæ firmiores, inferior nervis 7 prominulis: glumæ flores 3–4 æquantes. — SCOLOCHLOA.

1. G. FESTUCACEUM. *Arundo festucacea*, Willd. *Festuca borealis*, Mert. & Koch.; Hook. Fl. Bor. Am. 2, t. 231. *Scolochloa festucacea*, Link, Griseb. *Fluminia arundinacea*, Fries.

§ 2. Rhachis spiculæ etiam barbata; glumæ scabræ, inæquales, flores 3–4 subæquantes. — GRAPHEPHORUM, Desv.

2. G. MELICOIDES, Beauv. l. c. *Aira melicoides*, Michx.

Var. MAJOR. *Dupontia Cooleyi*, Gray, Man. Bot. N. U. S. ed. 2, p. 556. (Caryopsis libera!)

§ 3. Paleæ tenuiores; glumæ flores 2–3 subæquantes. — DUPONTIA.

3. G. FISCHERI. *Dupontia Fischeri*, R. Br. *Poa* (*Dupontia*) *pelligera*, Rupr. l. c.

Var. PSILOSANTHUM. *Poa* (*Dupontia*) *psilosantha*, Rupr. l. c. *Dupontia psilosantha*, Rupr. l. c. t. 6; Griseb. l. c.

§ 4. Glumæ spicula 2–7-flora breviores; flores parvuli. — ARCTOPHILA.

4. G. FULVUM. *Poa fulva*, Trin. *Poa* (*Arctophila*) *fulva*, *sclero-clada*, *latiflora*, *&* *pœcilantha*, Rupr. ex Griseb. *Glyceria fulva*, Fries. *Colpodium* (*Arctophila*) *fulvum*, Griseb.

5. G. PENDULINUM. *Poa pendulina*, Fl. Dan. t. 2343. *Poa* (*Arctophila*) *deflexa*, *remotiflora*, *&* *similis*, Rupr. *Glyceria pendulina*, Lœstad. *Colpodium* (*Arctophila*) *pendulinum*, Griseb.

Four hundred and ninety-second meeting.

February 4, 1861. — MONTHLY MEETING.

The PRESIDENT in the chair.

In accordance with the vote passed at the last preceding monthly meeting (*vide* p. 112), the Academy convened at the house of the venerable Josiah Quincy, upon the occasion of his entering his ninetieth year. The Academy by its President offered an appropriate address to Mr. Quincy, who responded in some interesting remarks, and the Academy was addressed upon the occasion by the President of Harvard University, the Hon. James Savage, and Professor W. B. Rogers.